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ADDRESSES.

ADDRESS ON STATE MEDICINE—THE PEOPLE AND THE PUBLIC HEALTH MOVEMENT.

Delivered at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June 7, 1892.

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In view of the great interest taken by the profession during the past year in the success of the measure brought forward by Dr. Comegys, I have thought that a succinct review of this important topic would not be inappropriate on the present occasion.

One day, while in attendance upon my second course of lectures in the University of Pennsylvania, sessions of 1842–3, it chanced that, examining the rich and varied stores of literature at a second-hand book store, my attention was arrested by an unpretending volume with a copious title page, the gist of which was: "An Inquiry into the Sanitary Condition of the Laboring Population of Great Britain." I purchased the book and devoured the contents, and perhaps no other volume has so influenced the thoughts, studies and pursuits of a long life as has that uninviting Government document, for the "Report" which it contained was the work of a master mind after mature investigation. Edwin Chadwick, the young and obscure Secretary of the "Commission" in that "Report," made a mark upon the civilization not only of the British Isles and of the wide expanded British Dominions, but upon the entire world.

The "Report" is dated London, May, 1842, and closed with conclusions: "First, as to the extent and operation of the evils which are the subject of the inquiry; secondly, as to the means by which the present sanitary condition of the laboring classes may be improved." These four concluding pages contain an admirable summary of practical public hygiene. No one now, fifty years after their date, can rise from their perusal without admiration of the genius which after two and a half years' study and observation elaborated them. As a practical application of the Baconian method of philosophy, they may be placed along side with the celebrated Essay of Dr. William Charles Wells, upon the phenomena of dew.

Fifty years ago, the fearful ravages of Asiatic cholera among the poor or laboring people of the British Isles was still matter of general comment. At that time also, the effects of the then recent revolution known as Parliamentary Reform were becoming manifest, insomuch that the wants and welfare of the people began to attract the attention of statesmen and party leaders, and have from that day to this been the main topics for legislation. The great feature of British history for the past half century has been the constant, steady elevation of the masses, and the one leading topic under this general head has been the public health. For proof, reference is made to the Acts of Parliament.

In 1853, the city of New Orleans was laid waste by an epidemic of yellow fever without parallel in all its history. An able Sanitary Commission was appointed by the Board of Health to make a report on this epidemic, which was published by authority of the City Council in 1854. It is a large and carefully prepared octavo, by able men. The treatise "Upon the Sanitary Condition of New Orleans," by Edward H. Barton, A.M., M.D., especially, was widely commended. Undoubtedly it was of great service to the Federal Government during the occupation of New Orleans, 1862–66 inclusive, when the city was noted for its cleanliness and healthfulness.

In this creditable municipal document, New Orleans made a step forward which, had it been kept up until now, would have placed it alongside of Calcutta or Bombay, with a population of over half a million, and commercial relations with the wide world. The calamitous experience of Tennessee in 1878 and 1879 reawakened popular interest in New Orleans upon local and maritime sanitation, and if the people do not go asleep, once more rapid progress towards its due position as one of the world's great cities may be expected.

One of the most remarkable examples of the people moving actively for sanitary reform, is found in the "Report of the Council of Hygiene and Public Health of the Citizens' Association of New York, upon the Sanitary Condition of the City," published in 1865. This massive volume, truly a manual of practical sanitation, was gotten up under the guidance of some twenty-four eminent surgeons and physicians of New York, who constituted the "Council of Hygiene." Names known, honored, reverenced and loved by us all occur in this glorious list. With one accord they all assigned the foremost place to Elisha Harris, their Secretary, who with Joseph M. Smith, President, and Willard Parker, Vice-President, constituted the executive of the Council. Dr. Harris' report upon the local sanitation of the city, its defects and remedies, has always been regarded as a model.

The influence of the British example in sanitary reform is nowhere better seen than in Massachusetts, where in 1850 was published "Report on the Sanitary Condition of Massachusetts," by Lemuel Shattuck, an eminent writer and legislator. This highly educated and most public-spirited community was among the earliest to comprehend the far-reaching benefits of State or preventive medicine. It was the first to establish a State Board of Health, which for the most part it has liberally supported, and which has brought rich returns to the State in more ways than one.

It will thus be seen that in America as well as in Britain, sanitary reform was inaugurated not so much by the medical profession as by the general public, looking at first to its protection from disastrous epidemics, and next to relief from preventable diseases and improvement in daily health. It may be looked upon as an outcropping of the well-defined tendency of the times towards the elevation of the people. An epoch-making tendency, germinated by the American Revolution of 1776, which startled the world by that of France, 1789, and which, by the general consent of thinking people with all shades of opinion, is about to accomplish social results and changes, most likely improvements, not less in magnitude than was witnessed in the fourth century, when Christianity supplanted Paganism in the Roman world.

Though not a medical movement, yet from the knowledge required to put it forward, medical men were naturally from the start called in by its promotors, and very soon took the lead. This is especially true in America, where in nearly every instance of city or State progress physicians have been the pioneers. So much is this the case that there is now some danger of the public looking upon sanitation as belonging *exclusively to our profession.* No greater mistake can be made. For it is law, and not medicine, that is most concerned. The prevention of disease and its cure are two very different affairs. Let every man be a law unto himself, every household a separate unit, and society would soon be reduced to savageism so far as health is concerned, while practitioners of medicine would reap a rich harvest. On the other hand, so soon as households are contiguous every man becomes his brother's keeper, and the law must come in with its commands and its penalties.

Of recent years the medical profession has been endeavoring to remedy this error by calling in the assistance of the people through voluntary associations composed of all descriptions of persons, and with remarkable success. Medical science can dictate what kind of laws should be made for the promotion of the public health, but is powerless to enforce these laws. Here the people in their individual and collective capacity must act. They must realize that they are the Government, and if the great city is hideously unclean, so as to merit the chastisement of a dozen Rudyard Kiplings, and the little village so nasty that no one wishes to keep his family in it, they alone are responsible.

If time allowed, we could fill pages with the enumeration of citizens' volunteer societies, from the "American Public Health Association," founded in 1872, now embracing the entire North American Continent, to "The Ladies' Health Protective Association of the City of New York," established some twelve years later, and which has already accomplished great good. These associations are doing much to correct the idea that sanitation is a merely medical business. If as active and as potent for another decade as in the past one, that mistake will be eradicated.

A powerful auxiliary in this line is the influence of the magazines and weekly publications. These abound in well written and highly scientific articles on all topics of public no less than private hygiene. Medical science is fast becoming public property. The magnificent progress upon which we so much pride ourselves of late years is the result of advances in chemistry, physics and biology. These belong to the great republic of science, and not to the mere province of medicine. We are the debtors of the scientists; not they to us.

Medicine, like theology and law, is rapidly passing from the esoteric to the exoteric stage. It can no longer be a secret or mystic calling, looked up to with the reverence and fear begotten of ignorance. Hence it follows that if the profession wishes to maintain the position hitherto freely accorded to it by the people as leading in sanitary reform, it must become a body of scientists. This it will be when, in due course of time, the improvements now rapidly taking place in the medical curriculum become universal.

At present, the special topic connected with the sovereign people and its action upon the public health in which this body takes the most interest, is the connection of the Federal Government with the work. Strangely enough, of all nations the American Republic is most backward in looking to the public welfare as it respects health. And that too, when there are certain great features which make the entire people one, with corresponding wants to be supplied, which only a rich and powerful Government can effect.

No sooner were local boards of health tolerably numerous in the United States and the establishment of State Boards well under way, than the necessity of Federal action was keenly felt, not only for coördinating and completing the work of these bodies, but also for accomplishing indispensable functions beyond the power of our largest cities, or most powerful and wealthy States. The argument for this Federal action is well stated by one of its earliest advocates, if he be not the first—the late Christopher C. Cox, M.D., LL.D., President of Board of Health, Washington, D. C., who as far back as 1871, devoted much time and energy in making known his views. I quote from the first volume of "Reports and papers of the American Public Health Association," pp. 523, 524.

"Important as is the preservation of health and prevention of disease, both in regard to individuals and communities, and early as the subject forced itself upon human attention, public hygiene never, until a comparatively recent period, assumed its deserved position, or became entitled to consideration as a distinct science. The frequent and terrible invasions of epidemics, and the occasional increased violence of endemic maladies, stimulated energy and research in the discovery of suitable means to prevent or modify the ravages of these relentless foes to health and life. The public mind became imbued with the imperative demand of such measures. Boards of health were everywhere established, the result of whose labors has been very largely aided by successful researches in the kindred sciences of physiology, pathology and chemistry. Who at this day questions the value of these local organizations?

"The idea of a central bureau of health is not perhaps altogether original with the author of this essay. More than fifteen years ago, an able treatise was issued from the English press, by Henry W. Rumsey, entitled "Essays on State Medicine." The original design of the work comprehended the establishment of a Central Sanitary Board under Government direction. The scope of the treatise was at first very extended, embracing the "bearings of preventive medicine upon the several questions of general legislation, as education, public works, popular representation, agriculture, commerce, etc., and to inquire how far hygienic principles had been, or might be recognized in the framing or execution of various measures of National inquiry and reform. Since the publication of this work, England has organized a central health department, and is now seriously contemplating a ministry of public health. Prussia, under the direction of Bismarck, is engaged in similar movements, while Germany has been long distinguished for her comprehensive National health code. The object of these efforts in Europe is what we desire to accomplish in this country, namely: the collection of the largest amount of correct information upon every subject connected with the public health, and sow it broadcast over the land, for the benefit of the whole people.

"Regarding the constantly increasing sanitary wants of our country, its extensive geographical area and varieties of climate, its climatic zones marked by certain morbid peculiarities and endemic diseases, its hydrology, the thousand agencies and influences threatening its soundness, it occurred to me that our government should advance among the first to conserve the health of its population, and avert the disasters which menace it. With this view, I prepared in 1871 the plan of a National bureau of health. This was subsequently submitted, as you are aware, at a meeting of sanitarians, representing the different sections of the country assembled at New York, and indorsed by them in a series of commendatory resolutions. Since then an 'American Health Association' has been organized, embracing in its membership the leading scientists and sanitarians of the United States and Canada; and at their last meeting, a special committee, of which I am chairman, was appointed to report upon the 'necessity of a national sanitary bureau.' I allude to these facts for the purpose of showing that I have not urged this subject prematurely before Congress, but after full and earnest interchange of views with others whose high standing entitles their views to credit and respect."

The American Public Health Association was organized in 1872 by a conference of prominent Sanitarians. At this conference Dr. Cox again brought his plan forward. At the first Annual Meeting of the Association, Cincinnati, 1873, Dr. Cox made an elaborate report from which the above extract is taken. This report appears at length in the first volume of "Public Health", 1875. Thus it seems that the ideas of Dr. Cox were widely and persistently pressed upon the attention of sanitary bodies, and are still bearing fruit.

Had this effort been properly seconded by the medical profession, the Bureau would doubtless have been established. Nothing came of it, and when the Yellow Fever epidemics of 1873 and 1878, and also the widely spread devastation of cholera in 1873, terrified the land, no resistance was made. However, this very helplessness aroused the people, especially those of the Interior Valley which had most suffered. At the Richmond meeting of the American Public Health Association, 1878, action was taken which resulted in the creation of the "National Board of Health," by Act of Congress, approved March 3, 1879. Great pains were exercised to harmonize this Board with State and Local Boards. Its members appointed by the President were typical representatives of the profession. When organized on the second of April, 1879, these members chose as their President and Vice-President, two physicians of whom it is safe to say that they had the confidence and esteem of the whole country. This confidence was soon tested by the second Memphis epidemic, that of 1879, which broke out in mid-summer. In coöperation with the Tennessee State Board of Health, Memphis was isolated, or quarantined, the destitute cared for and no spread of the disease allowed. Immediately upon its abatement, in conjunction with the Memphis authorities, the National Board entered upon that course of sanitary re-generation which has since made the said city a favorite example for sanitarians at home and abroad.

How it came to pass that after a few years, just sufficing to prove its great capacity for good, it was starved to death, no one has satisfactorily explained. Perhaps it was owing to the fact of not being in the usual model of government offices at Washington. Had it been a Bureau in the Department of the Interior, those familiar with Washington, hold that it would now be in existence, and in a fair way to become a Department, with or without a seat in the Cabinet.

Concurrent with the decline of the National-Board of Health has been the expansion of the Marine Hospital Service, which in some respects already represents the government in the field of preventive medicine. *De facto* the U. S. M.-H. S., is one of the most important "Bureaus" at Washington both as to expenditures and duties. It has as its head an accomplished medical gentleman who owes his position to merit alone, and who is virtually a "Medical Commissioner of Health." Some have maintained that the readiest way to reach the desired end would be to change this "Service" into a "Bureau of Public Health," leaving it what functions it now has and adding others. What is now the very important "Weather Bureau of the Department of Agriculture" began in a very insignificant way as the work of "the Chief Signal Officer of the Army." Truly a great oak from a little acorn. The overshadowing postal department began in an equally obscure manner about a century ago.

Prior to 1862 "Agriculture" was hid away in the Patent Office, itself a Bureau in the Department of the Interior. It then became a Department with a commissioner at its head. Recently its head has become a Secretary with his place in the President's Cabinet. And now it proudly holds its position as second to no other branch of the people's government.

Growth, or evolution if you prefer, seems to be the law at Washington. Sooner or later the Department of Public Health will exist as a part of the National government. This department will embrace under its capacious folds several functions now partially filled by services attached to different departments. In the meantime the more efficient these services are rendered, the more complete will be our Ministry of Public Health when created.

Maritime quarantine is by common consent deemed a foremost duty of the Federal government. The States have been tried and found wanting as safeguards against the importation of those pestilential exotic diseases, most feared by the American people. This duty in a partial way is now confided to the United States Marine Hospital Service. That in strumentality should in this respect be made perfect and thorough, fully equipped for watching all our immense lines of ocean, gulf and lake coasts. This is so generally recognized that a very little effort by the profession speaking for the public, would secure the necessary appropriation.

One great Bureau in a Department of Public Health would be that of vital statistics. This touches every man, woman and child in all our 70,000,000, even more than does the Weather Bureau, which is an exceedingly popular concern with the people. Without vital statistics, reliable and not guesses, the servants of the Public Health are working in the dark. The birth rate, the death rate, the prevalence of diseases as shown by mortality tables are fundamental data for our guidance.

Reliance upon State efforts to furnish these is shown by the experience of more than a century to be absolutely futile. There is an existing agency of the government known as the Census Office in the Interior Department, which every ten years has an immense work in hand. For collecting vital statistics, this service should be perpetual. It is quite safe to estimate that an expenditure of about half a million of dollars annually, would maintain a system of registration recording the wanted facts connected with each birth and death in the entire vast Republic. This system of registration can easily coöperate with State and Local Boards, only it would be uniform and paid for out of the general fund. It is hardly necessary to elaborate this idea. The absolute necessity of such a registration for public health purposes, and its manifold benefits to the business interests of all parts of the country are manifest to the most casual observer.

Another much wanted sanitary work directly within the province of the general government is the execution of a minute topographical survey of the entire country, and the mapping its results on a scale so extensive as to embrace every important local feature. Such maps are needed by the agricultural, commercial and military interests of the people. For all public health improvements, these maps are indispensable. For health purposes the whole seventy or it may be one hundred and seventy millions of people constitute but one family. The immense area of three million and more square miles, with its circumambient atmosphere is only one great big habitation. As the Weather Bureau keeps us constantly informed of aerial changes, so should the permanent features of the house be made known once for all by an analogous Bureau, whose field is the land, and the water in and around the land. Such surveys and such minute maps splendidly executed have long since been commenced or finished by Great Britain, Spain and other European governments. Every advanced nation in the world recognizes the value of this work as a contribution to general science and as an aid to home development. It pays well and cannot be done by the separate fragments of a great country. It can be undertaken alone by a great and rich people.

This survey and mapping has been commenced on a small scale and for two definite purposes, years ago by the United States government. Under the Treasury Department there is the Coast and Geodetic Survey, which under the superintendence of very able scientists has accomplished results of immense value to the commercial and naval interests of America. Extensive as is this survey, it is but an item in the great scheme outlined above, though the indispensable beginning of the same.

In the Department of the Interior we find the U. S. Geological Survey a complement to the last mentioned. The results of both these surveys combined make a useful whole.

There is a function of the National Public Health work which is now performed in a disconnected manner by several Bureaus and offices at Washington. I refer to scientific research and outfit of value to State Preventive Medicine, beyond the scope or the obligations, no less than the means of the individual States. Such researches are made under special provisions in Acts of Congress, sometimes by the Marine Hospital Service and its able corps of experts; sometimes by the Smithsonian Institution; at others by Commissioners appointed by the President for a definite purpose. A recent result of the latter is the valuable cyclopædic "Report on Cholera in Europe and India," by Dr. E. O. Shakespeare, who was appointed by President Cleveland, Oct. 1, 1885, and who on Nov. 17, 1890, transmitted his great work to Secretary Blaine, after having given five years of travel and study to its preparation, "all voluntary and without pay for personal service." Perhaps there is no other instance of an individual holding the high appointment of Commissioner from our National government, acting in so patriotic and liberal a manner, and furnishing an example so worthy of imitation by men of means and culture. Well may the medical profession take an honest pride in such a worthy colleague.

The outfit of special interest and usefulness to the workers in sanitary progress at present furnished by the Washington Government without reference mainly to this purpose, are twofold. The Museum of Hygiene under the care of the Department of the Navy. This is a new establishment, which though supported by meagre appropriations, has already demonstrated a capacity for very valuable services. If the plans of those in charge are carried out, but a few years will elapse ere a constant stream of pilgrims will visit Washington from cities and towns in order to get practical knowledge, which otherwise would cost long and tedious research. The medical profession should see to it that this very important museum is not overlooked by Congress.

But best known at present is the "Library of the Surgeon General's Office of the U. S., Army." Under this insignificant title, indicating a very limited use, has in a few years grown up one of the most complete medical libraries in the world. Also it is in buildings, equipment, volumes and management a leading institution of the Union. It has given honorable renown to our country, among all scientists abroad. It is the great storehouse for information freely accessible to all who devote their energies to healing or preventing disease. Who would imagine that at this late day any statesman at all in contact with the one hundred thousand practitioners of medicine in these States, would dream of reducing its modest allowance of ten thousand dollars per annum, to the miserable pittance of one half that amount?

The general government does far more for sanitary science than at first sight appears, or than it has had credit for. This is evident from the above rather imperfect analysis of its disjointed work.

If a Department of Public Health were now created, with its head holding a seat in the President's Cabinet, it could at once be furnished with an ample number of Bureaus to give it a high place in the public esteem, and to keep that head fully as busy as any of his colleagues. The U. S. Marine-Hospital Service, expanded as it ought to be would furnish at least three Bureaus with a number of drawers each. Namely, those of Maritime Quarantine, the Marine Hospitals, and Scientific Researches. The Coast Survey, the Geological Survey, the Great Medical Library and Museum, with the Museum of Hygiene would constitute also ample Bureaus for first class Commissioners. While the Bureau of Vital Statistics would soon become almost a Department by itself.

Let it be well understood that the elimination of all these offices from the departments now looking after them,in order to make up a great Department of Public Health, can take place with no injury, but rather a relief to the present Secretaries. The overburdened Treasury Department can readily spare the U. S. Marine-Hospital Service and the Coast Survey. So can that of the Interior, the Census Office and Geological Survey. War has ample scope and verge enough without the Medical Library, as has the Navy without the Museum of Hygiene.

In looking over the transactions of the American Medical Association for the past twenty years one is impressed with its indifference to the work of the Federal Government in promoting the public health rather than otherwise. As late as 1877, the expressions were that it was too early to move in this direction, and that action should be deferred until State Boards of Health were generally created. The success of the American Public Health Association before Congress in 1878-9, proves that this was an erroneous idea, and that the people were ahead of the profession in sanitary progress.

At the Washington meeting of this body, 1884, Prof. Deering J. Roberts, M.D., of Tennessee, in an elaborate address on State Medicine, strongly argued for a "Minister of Public Health." Had this thesis been taken up and pushed by the medical profession as it should have been, ere now the *projet* would have been *un fait accompli.*

More recently the American Medical Association has become alive to the necessity of action. This is evidenced by the greatly increased interest taken in the Section of State Medicine, which for years had an existence almost nominal. Also by the tone and substance of the addresses from our presidential chair.

The able and well considered efforts of Dr. C. G. Comegys have at last awakened this Association to an interest never before manifested by it in behalf of National sanitation.

Now there should be no uncertain action. The other chartered and National organization, which for twenty years persistently worked on this line, and at one time with marked results,has a standing Committee on "National Health Legislation." This Committee is composed of eminent men from all sections of the great republic and is charged with the duty of keeping the subject before the National Legislature. Would it not be well to have a similarly empowered permanent Committee from this body, which acting in concert with the American Public Health Association, the American Association for the Advancement of Science, the Congress of Physicians and Surgeons and other scientific bodies should do efficient service in advancing the cause?

In concluding this brief outline of a grand movement, let it be emphatically stated that of all the reforms projected and pushed in this busy nineteenth century, none touches the great masses more closely than this. The people, the working and voting people are with us. Read the manifestoes of the numerous labor organizations of America in which are gathered not only the sinews but the brains of a mighty people, and you will see as a keynote running through the whole diapason, the sacredness and value of home, of wife and children. And hence constant allusions to sanitary wants and improvements. No better sign for the future permanence, grandeur and happiness of the greatest Nation upon whose domain the sun has as yet shed its rays, could be desired.

DELIVERY THROUGH THE ABDOMINAL WALLS vs. CRANIOTOMY, IN OTHERWISE IMPOSSIBLE BIRTHS.

Read before the Section of Gynecology and Obstetrics, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June, 1892.

BY GEORGE I. McKELWAY, M.D.,

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It is not the purpose of this paper to decide what degree of contraction or what other obstructions render birth through the natural passages impossible, nor is it its purpose to consider the indications for inducing premature labor, but simply to discuss which shall be done—some form of Cæsarean section or a craniotomy in cases in which election between them is called for and possible.

Of course the first and most important thing to be considered (not the *only* question however), is the maternal risk or mortality under the respective operations. If it should be proven that the one in all cases or in most cases, is exceedingly more dangerous to the mother than the other, our action should be largely guided by that determination. There are conditions which modify this mortality in individual cases; whether, on the one hand, the mother through long labor and ignorance or neglect, or careless handling on the part of her attendants, has become septic and so exhausted that her life would be very greatly imperiled by the shock of the Cæsarean section, and, what should be considered coincidently, whether the fœtus still shows evidence of so much vitality as would justify subjecting the mother to added risk for the mere possibility of saving it. On the other hand there must be considered the risks of embryotomy in the individual case; whether the destruction and piecemeal extraction of the child may not be as dangerous or more dangerous, to the mother, all things considered, than is the extraction of even a dead fœtus through the abdominal walls. Into the discussion of possible individual cases, however, it is not my purpose to enter.

The primary and basic question, so far as the maternal risk only is concerned, would seem to be that of the relative mortality of embryotomy done deliberately in suitable cases before the mother is either septic or exhausted, and Cæsarean section, either the improved Cæsarean or Porro operation, done under the same conditions. The writer despairs of answering this question for the reason that craniotomy has not yet been done in this premeditated way sufficiently often to determine what its mortality would be were it so done. The woman is usually permitted to exhaust, and possibly infect herself, maybe by days of fruitless efforts to deliver herself, and by attempts on the part of her attendants to deliver by forceps or version or both, before craniotomy is performed.

The operation of craniotomy is so repugnant, excepting as the last possible resort, that even when practically convinced that it must be done later, if labor and attempts to deliver by forceps or version are permitted to proceed, many obstetricians, even the most skilful, hope against hope and for their own sake, as well as for the sake of the parents and friends, permit such fruitless labor to go on and attempt all other procedures until it is demonstrated to all interested that the delivery is impossible, before resorting to craniotomy; and the writer believes, because of the nature of the operation, that this will always be the case in general practice where embryotomy is held in thought as a possible last resort and as an excuse for avoiding a section. So that it is impossible to obtain sufficient data upon which to base a statement as to what the maternal mortality would be were craniotomy deliberately resorted to at the very commencement of labor.

This is not true, however, of Cæsarean section. In these later days it has been resorted to deliberately and with all the conditions favoring its successful determination, and our conclusions as to the possibilities of this operation should be based on the results of it so done. It is unnecessary to state that our estimate of the danger of either procedure must not be based upon results obtained before the Listerian era. Such results have no relation whatever to the mortality that may be expected from either operation in these days. Surgery, and especially obstetrical and abdominal surgery, is a new art, and it is no more fair to judge what the results will be in the future by the statistics of either operation performed before the time mentioned than it would be to judge of the mortality of ovariotomy tomorrow by the results of Washington L. or John Atlee's cases.

Besides the question of the maternal risk there comes the question, which has not heretofore been sufficiently considered and which it has been the custom to ignore, and that is, as to what amount of risk the mother is to be subjected in order that her child's life may be saved. The purpose of pregnancy is a living child; and this should never be forgotton. Supposing, for instance, that the mortality for Cæsarean section in cases parallel to a special case that may be under consideration, is twenty per cent. to the mother and five per cent. to the child. Supposing further that the mortality of embryotomy in such a case is estimated at eight per cent., is the mother to have all the chances for life that she may possibly have and the child to have none? Or shall the mother relinquish twelve additional chances for her life, still having eighty in the hundred, in order that her child may have ninety-five of its hundred? Or shall the child give up its whole hundred chances in order that the mother, who, in a Cæsarean section, would already have eighty in the hundred, may have twelve more?

Has the unborn child any right the obstetrician is bound to respect?

Let us determine first, as accurately as we can, what the mortality of embryotomy is, done under as good conditions as we should be likely to find. I am perfectly aware that some obstetricians claim that in properly selected cases, embryotomy is without a mortality. For instance it is stated that Leopold has had ninety-two craniotomies without a death and Dr. Robert A. Murray, in the *New York Medical Journal* of June 1, 1890, says, while pleading for the Cæsarean section, "my own statistics are that in over twenty craniotomies performed under strict antiseptic precautions, I have not had any mortality. About half of these were done on the after coming head." And yet the fact remains that women die after it and apparently in consequence of it. It has its serious risks. There are the risks of sepsis, and of hæmorrhage and of shock.

The best collection of statistics as to its mortality that I know of, is to be found in Dr. E. P. Davis's article in the second vol. of the American System of Obstetrics. These statistics represent the operation as done since the introduction of antiseptic measures. He quotes the reports of Spiegelberg's cases, of Wyder's, Merkel's, Olshausen's, Winckel's, Jaggard's Report of Carl Braun's cases, Präger's cases, Determann's Statistics and Caruso's Statistics. The death rate in these cases runs from one and four-tenths per cent. to thirteen and three-tenths per cent., and the average mortality of the operators quoted is 7.95 per cent. So that it is fair to say that the maternal mortality, in such cases as those in which embryotomy has hitherto been done by the best operators under presumably the best condition, is *about* eight per cent.

In addition too, to the risk to the mother's *existence* we should not lose sight of the question as to what her condition in after life may be: the risk of laceration, of fistulæ, of injury to ovary, tube or uterine body, and the possibility that in many cases an operation more serious than a deliberately performed Cæsarian section may be necessary before the mother will have again a condition of health making life worth living. Furthermore there is the awful suspense to the woman and her friends, the long, dreadful, painful ordeal and the disappointment that comes from the fact that after all she has gone through during her pregnancy and her labor, the purpose of it all, the birth of a living child, has not been achieved.

We must compare the mortality of the Cæsarian section with that of the operation we have just considered. For this operation also it is claimed that there should be no death rate. I quote Dr. Egbert Grandin, who says "The Cæsarian section performed advisably ought not to have a mortality rate." But as in the case of the other operation, we find that women do die after it and apparently in consequence of it. It has its risks; those of sepsis and of hæmorrhage—not so serious, in my judgment, as they are in embryotomy—and the risk of shock, which is possibly greater.

Dr. R. P. Harris[1] states that Sänger has operated eight times consecutively without a maternal death, and Dr. Cameron, of Glasgow, ten times with but one death. In this country within the last few years Dr. Howard A. Kelly has operated four times without a death, Dr. Wm. Goodell twice without a death, and Dr. Lusk four times—losing one patient. Dr.

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[1] Gynecological Transactions, 1891

Joseph Price, of Philadelphia, has performed the Porro operation five times with no deaths. Leopold, in his cases from 1884–88 inclusive, has had a death rate of 8.6. These were Porro operations. Zweifel lost but one woman and one child in eighteen (new operation) cases. The woman that he lost was eclampsic when operated on, and, it is claimed, died from eclampsia. Dr. Harris, in the *American Journal of the Medical Sciences*, October, 1891, quotes the statistics of Leipzig, furnished him by Prof. Sänger, showing thirty-eight cases by eight operators with three maternal deaths and four children lost. Two of the women died of septic peritonitis, the other was Zweifel's case just spoken of. These thirty-eight cases include Zweifel's eighteen cases. Dr. Harris further says (it is impossible to avoid quoting Dr. Harris, for he has contributed much to the study of this subject) that in the Maternity of Allgemiene Krankenhaus, Vienna, there were twenty-five Cæsarean deliveries by both the improved and the Porro method from 1886–89 with only two women lost and all the children were saved.

I do not care to go further into statistics. Such inquiry, unless limited, is apt to prove too much or too little. The figures I have quoted, by showing what *has* been done, prove what *can* be done, and unless the world stands still, better results than these will be achieved in the near future. From these figures I believe it to be fair to state that the mortality of the improved Cæsarean section, done in women not exhausted by labor, and done under proper antiseptic or aseptic precautions, by skilful operators, is not over 10 per cent.; and that the mortality of the Porro operation under the same conditions will not greatly, if at all, exceed this. Now even if the contention that has been made, be granted, and we decide that, while Cæsarian section has a death rate of about ten per cent., craniotomy has no death rate at all, I do not conceive that this is an overwhelming argument in favor of the latter operation in the class of cases that we are considering. Our training and traditional thought is such, that without an effort, we do not think at all of the living unborn child and we leave it out of our calculations. Parry in his classical paper read some years ago before the Philadelphia County Obstetrical Society emphasizes this absolute ignoring of the child's life, by calling attention to its value in these words—speaking of the statistics of the mortality of the seventy cases of craniotomy he quotes, he says "If we remember that in the seventy cases included in the appended table only thirty-three out of the 140 lives were saved, the truth becomes almost too horrible to contemplate."

I do not regard the physician as primarily the conservator of individual life; his duty is to all human life and to its conservation, and his obligation is as great, other things being equal, to life incarnated in one body under his care as to it in another. I grant that things are not equal as between the mother and her unborn child, but they are very much nearer so than is argued by the habit and thought of many obstetricians.

There are those, however, who believe that even considering the mother only, Cæsarian section done under proper conditions, is as safe for her as is craniotomy; and the safety of the former operation, compared with the latter, increases very greatly as her pelvis narrows. For instance Dr. Lusk says, speaking of craniotomy, "In the hands of an operator of limited experience, I believe the Cæsarian section, when timely made, offers ordinarily to the mother a better chance of recovery."

Dr. Harris says,[2] "The new Cæsarian operation in the hands of a Zweifel or a Leopold, in a case of extreme rachitic deformity of the pelvis, is less fatal than an embryotomy is in skilful hands where there is the same degree of pelvic stenosis."

Dr. Grandin in the *New York Medical Record*, of June 6, 1891, states that the operation (Cæsarian section) is not so dangerous as the removal of the uterus for fibroid tumors. He further states that the technical skill for a difficult craniotomy needs to be as great as for an ordinary Cæsarian section.

Dr. R. A. Murray[3] of New York, says in speaking of a case in which Cæsarian section was done: "but the operation must be contrasted with craniotomy, the only other resort in this case. Formerly Cæsarian section was only resorted too where craniotomy was out of the question, but now, where it becomes a question of saving the child, I hold that the preference should be given Cæsarian section, for, if the case be taken in time, we find that our statistics will become more favorable for the mother—even more favorable than craniotomy. I have nothing to complain of in craniotomy. I have not lost a patient, although I have had a number of cases. Yet I know operators who still maintain that Cæsarian section should not be done except for absolute indications. In one instance the operator spent three hours in relieving the patient of the child. She lived, but she had a torn vagina, a lacerated cervix, and an infection afterward which left her worse off than if she had been dead. I think we must take the after condition of the patient into consideration. Where it becomes a question whether to do laparotomy or craniotomy, I think that even the average practitioner, certainly the average laparotomist, will get about as good results from Cæsarian section, for the mother, and the child is saved."

Dr. Egbert Grandin said, in the discussion which followed this paper, "the statistics of Cæsarian section as clearly set forth in the paper which our distinguished colleague has read, fortifies me in the position which I have sometime held—that the time is ripe for the deliberate *election*, in hospital practice at any rate, of the Cæsarian section over embryotomy. Once let it be proven that we can save the child through the elective section, and yet not imperil the woman to a greater degree than does embryotomy, and there ceases to be an excuse for the destruction of the living fœtus."

Dr. Parry says in his memorable paper, from which I have previously quoted, "the Cæsarian section is much more easily done than craniotomy when the anterio-posterior diameter of the superior strait is two inches or below it."

The writer has heard Dr. Joseph Price, of Philadelphia, speaking in the obstetrical society upon the small risk in the Porro operation when properly done, say that he believed that he had done his last elective craniotomy, and the honored president of this section has expressed about the same conviction to the writer.

Dr. A. P. Dudley, of New York, in speaking of the danger of Cæsarian section, says "the elective Cæsarian section should have a lower mortality than the average ovariotomy." This because of there being no adhesions, no uncontrollable hæmorrhage and the avoidance of sepsis.

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[2] Gynecological Transactions, 1891.

[3] Gynecological Transactions, 1891.

So long as it seemed that in doing the Cæsarian operation upon a pregnant woman in the case of whom craniotomy might have been done, the result was almost invariably only the possible saving of a frail, infantile life at the expense of the mother's existence, there could be no question as to which operation should be performed. But that day has gone by and it is not to-day at all a question of the *saving* of one life at the expense of another, but merely a question of a not very great additional *risk* to one life in order that the other may be saved and that the purpose for which the woman entered into the marital relation and for which she became pregnant, might be achieved. Speaking of this question of risk, Dr. Grandin pertinently asks, "if the woman may take her life in her hands in order to get rid of, we will say a cystic ovary, *by what right* may she refuse to run about the same risk to save the fruit of her womb?" He further says [4] "to state my position in a nutshell—given an instance of slight pelvic contraction in which the chances are against the delivery of a living child per vias naturalis, and the time for induction of premature labor with resulting viable child having elapsed, the obstetrician is justified in performing the Cæsarian section, provided always the fœtal heart sounds are clear and regular." I despair of finding better chosen words to express my own convictions and am tempted only to additionally ask whether, in such a case, he can be justified in any other procedure.

It would seem hardly necessary for me to emphasize the fact that the obstetrician alone must be the judge of what is to be done. The preference of the ignorant or prejudiced parents or of the friends, the disposition on their part to save the life of one being from any added risk at the expense of the other being, or any sentimental considerations on their part of any nature, for or against either life at the expense of the other, should not weigh at all in the obstetrician's mind or decide his course. The responsibility is his for his conduct in the case and he can not answer to his own conscience if he does that which he believes to be inadvisable or wrong, simply because someone else prefers that he should. Once let this principle obtain of permitting the parents or friends to judge and dictate what his course should be and where can we logically stop? Certainly not only when the woman has come to labor; as well should he be influenced by them at the fifth month or at the first as at the ninth. That he is justified in his action by the desire of his patient or her friends is the reasoning and excuse of the abortionist and if he is to be condemned for fulfilling such a request in the first months of pregnancy, simply because they desire it, so also is the obstetrician to be condemned for adopting a course, if he believe it to be unwise and wrong, simply because the friends or patient desire it; in neither case should their preference count as against his conviction. He should determine for himself the proper thing to do without letting sentiment or circumstance move him; should state that he will do this thing and this thing only and then either do it or give up the case. Either his firmness and conscientiousness will carry the day or someone else will be found more complacent. In either event his conscience will be clear. In no other operation, involving certainly the destruction of one human life, are men of conscience so apt to put their own trained intelligence and judgment absolutely in abeyance to the ignorant sentiment and prejudices of other people, as in that of craniotomy.

Speaking of the matter of permitting the friends or the parents to decide what should be done, Dr. E. H. Grandin says, in the *New York Medical Record*, January 6, 1891: "Should the laity have any voice in the decision whatsoever? As physicians, we are not to weigh the relative value of one life over another. We are called upon to do our best by the *two* lives committed to our charge, and if we can once deliberately conclude that the Cæsarian operation carries with it but slight if any greater risk to the woman than does embryotomy, then it at once becomes our duty to elect that operation."

View, for a moment, this operation of craniotomy in such cases as we are considering, in another light. Suppose, if you please, the mortality from Cæsarian section had been brought to 10 per cent. under proper conditions, as it has, and suppose that the operation of craniotomy upon a living child that could be delivered through the abdominal walls, had, up to this time, never been thought of, proposed or done, in what light would the man be regarded, who, while, advocating that Cæsarian section be performed in cases where from pelvic contraction or other cause, even a dead child could not be extracted through the pelvic outlet, advocating such a procedure, I say, under *such* circumstances, would to-day propose and inaugurate the up to this time unheard of and unthought of operation of craniotomy on the living child! Would his action not be regarded as monstrous and infamous? And would he not be in danger of both civil and criminal prosecution? Excepting that the operation is not a new one but has been done very many times, the conditions are such to-day as I have supposed. If we would condemn the man who would to-day inaugurate it, can we justify the man, who, it having been practiced, continues it?

Traditions are queer things. We are slaves to them in other lines than lines ecclesiastical. We have heard about, and seen, and read about and become familiar with this operation of craniotomy, and therefore it does not seem to us the horrible, awful thing it is, but if we can once bring to our mind what our horror and indignation would be if it were possible for us to be in such a position as I have just indicated (with the operation until now unheard of) we can realize to some degree what it really is. To-day I believe that practically in every case it is an unjustifiable procedure. There may be exceptions to this but certainly there can be no exceptions in our hospitals where our patients are under observation before labor, nor in our private practice where like conditions exist. Rarely, very rarely we may be called to cases where labor has progressed so far before our seeing the case that the extraction of a living child through the abdominal walls is an impossibility, and craniotomy on the after coming head is necessary. But this will be very, very seldom.

I have purposely avoided entering into the relative claims or mortality of the new Cæsarian and Porro operations. I have also avoided the whole question of whether the woman should be rendered sterile by the removal of her tubes and ovaries or the ligation of her tubes at the first operation.

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[4] Gynecological Transactions, 1890.

The consideration of these questions or of the others which I avoided in the first words of this paper, while important, would now only befog what I have sought to make the sole question here. It is this: should craniotomy ever be done in those cases in which there can be and should be a deliberate election between it and a Cæsarian section? I vote—No.

One thing is most vividly brought to my thought by the consideration of this matter. It is the necessity for the more thorough training of medical students that they may recognize early when induced labor is likely to be required and to be successful, and when it is better to do a Cæsarian section and how to do it. They are taught to induce labor, they are taught how to do craniotomy; they are not always well taught as to how to do Cæsarian section and the Porro operation, and they are not always well taught as to when induced labor is likely to be successful, or how to recognize the cases in which they must be prepared to do, or have done, a Cæsarian section, either just before or at the onset of labor. I would not advocate that every man who is likely to attend a labor case should attempt to do Cæsarian section, neither would I advocate, did I believe craniotomy justifiable, that every man should attempt to do craniotomy. But I do believe that no man should be permitted to graduate from our medical schools, who has not such a knowledge of pelvimetry and what it means but that he shall know just what can be expected from and what must be done with every case under his care and know enough, even should he not feel competent to attempt an obstetrical operation himself, to have the services of someone for his patient who is able, not only to save *her* life, but also to deliver her of a living child.

In these days when every small city has its gynæcologist, fit and able and willing to do Cæsarian section, either at home or away from home, either for a fee or without it; when every little city has its hospital, public or private, where such an operation can be done if the patient's home is to humble for the necessities for it, there can be, in my judgment, but very rarely excuse for the sacrifice of human life made necessary by failure to recognize beforehand the conditions necessary to be met and to use the means required to overcome them.

THE TREATMENT OF POSTERIOR ROTATION OF THE OCCIPUT DURING LABOR.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Among the complications of labor not requiring surgical interference, none is more important or fraught with greater danger to child and mother than posterior rotation of the occiput. We desire to substitute this term for that commonly employed —"occipito-posterior positions"—believing that the method of obstetric study that recognizes but two positions for each presentation is more rational and serves a better purpose than the more complicated system that calls for many positions. We shall then make but two positions for each presentation. For example, a vertex presentation has a first and a second position. The first is the usual one, the back of the child directed toward the left side of the mother, and the vertex directed slightly toward the left side of the mother's pelvis. The second position of a vertex presentation is that in which the back of the child is directed toward the mother's right side, and the occiput points to the right of the mother's pelvis.

During labor the occiput, in the vast majority of cases, turns forward, toward the symphysis pubis. Occasionally it descends through the pelvis, showing a tendency to turn posteriorly, thus giving rise to what have been styled "posterior positions." It occasionally happens that during pregnancy the occiput is situated behind the centre of the mother's pelvis; whether the occiput endeavors to turn backward, or whether during pregnancy it is situated slightly behind the centre of the pelvis, it is more rational and easier of comprehension to call this abnormal turning of the occiput "posterior rotation" than to make four positions, two of them posterior. In common with many Continental students of obstetrics, we style the condition as an "abnormal rotation of the occiput," and not as "occipito-posterior positions."

The causes of the tendency to turn posteriorly are several. The mother's pelvis may be narrowed in its anterior half and its sides may lack those surfaces anteriorly to a line drawn upward and forward from the spines of the ischia that normally favor the anterior turning of the head. The head of the child may be of unusual size or contour, finding its most convenient lodgment at the posterior extremity of one of the oblique diameters of the pelvic brim. Again, during labor, the posture assumed by the mother may not be such as to favor the anterior turning of the vertex. Many cases exist in which no one factor has been found to be entirely responsible for the abnormality; thus, a small child may enter the pelvis with its head in partial extension or flexion, and this intermediate condition remaining, the occiput may turn toward the hollow of the sacrum.

Some of the symptoms of posterior rotation of the occiput may be perceived before labor has actually begun, while others are discernible only after the commencement of labor. Palpation and auscultation will often reveal the fact that the occiput is directed toward the middle line or even slightly behind the centre of the pelvic brim. The back of the child may be turned somewhat posteriorly, so that the heart-sounds seem to come from deep in one side of the mother's abdomen. If the abdominal walls are thin, the occiput can be mapped out and accurately located. If a history of previous labors be sought, there will be an account of prolonged parturition, probably ended by instrumental delivery, and often resulting in the death of the fœtus.

At the time of labor it is often difficult to map out accurately the position of the head unless the tissues be elastic and admit of manipulation. If the attending physician notices the absence of the vertex in the anterior half of the mother's pelvis, he will do well to allow her to inhale sufficient chloroform to permit the introduction into the vagina of enough of the hand to make a positive diagnosis.

We shall best understand the indications for treatment by considering briefly the course of a hypothetic case if left to nature. Statistics show that the greater number of cases result in anterior rotation of the occiput without assistance. By some the proportion of cases that rotate spontaneously to the front is placed as high as 96 per cent.; others allow but 75 per cent. My own observation and the records of 219 cases occurring at the Philadelphia Hospital, lead me to believe that 87 per cent. of these cases terminate spontaneously with anterior rotation. A source of fallacy in a study of the question arises from the fact that an exact diagnosis of the position of the head is rarely made early in labor; a practitioner is often satisfied with finding that the head is presenting and that the face is not the part found by the examining finger. Thus, a case in which posterior rotation has begun, but which terminates by turning forward, is not recognized until anterior rotation has occurred.

If we seek to ascertain the factors upon which anterior rotation depends, we find them to be essentially three in number: First, a normal proportion in size between the head and the pelvis; thus, a small head in a small pelvis favors normal rotation, and a large head in a large pelvis is likewise favorable. Secondly, a flexed position of the head is essential to anterior rotation of the occiput. Thirdly, the forces of labor must be normal, namely: the contractions of the uterus and the resistance afforded by the pelvic floor. If any one of these factors is notably deficient, a perversion of rotation is very likely to occur.

Abnormal rotation of the occiput is a source of danger to the life of the child and to the integrity of the mother's tissues, and also to her life. The child's life is jeopardized by long-continued pressure during prolonged labor, resulting in visceral hæmorrhage and death. The mother's tissues are endangered by reason of the abnormal prolongation of the pressure of the head during efforts at rotation, and her life is imperiled by the added risk of septic infection and exhaustion.

The treatment of such abnormal rotation would rationally consist in an effort to supply the one or more factors already described that may be deficient or perverted. Although the physician cannot remedy disproportion in size between the head and the pelvis, the sooner he becomes aware of such disproportion the better for his patient. No woman should be attended during her first pregnancy unless her pelvis has been measured by her medical attendant. In making this statement we do not insist upon an elaborate measurement of the pelvis, but urge that three external measurements be invariably made. These are: the external conjugate, the distance between the anterior superior iliac spines, and the distance between the outermost points of the iliac crests. If the physician has the opportunity of making such an examination as early as the thirtieth week of gestation, he may, if necessary, be able to induce labor, thus securing a normal rotation of the occiput before disproportion between the head and the pelvis has gone so far as to endanger his patient. If he does not see his patient until she is considerably advanced in labor, the knowledge that her pelvis is smaller than the average will be of great value in preventing the futile effort to deliver a large head through a pelvis too small for it. In addition to the measurement of the mother's pelvis, an effort should be made to ascertain the comparative sizes of the head and the pelvis. This can be done by placing the patient upon her back, her thighs being flexed, while the fœtal head is gently pressed downward into the pelvis by the examining hand laid broadly behind the pubes, the other hand steadying the fundus of the uterus. If more exact information is desired, one hand may be placed against the head by internal examination, while pressure is exerted with the other hand behind the pubes. A head that begins to slip into the brim of the pelvis under such manipulation is not too large to rotate successfully during labor.

Flexion of the head, necessary to secure anterior rotation, may be promoted and maintained by the employment of the hand, accompanied by the use of forceps. When the physician discovers that the occiput is turning posteriorly, while the head is but slightly flexed, if the patient be anæsthetized sufficiently to permit the introduction of the hand, the occiput may then be drawn down, or the chin pushed upward, and flexion secured. If this effort fails, flexion may be secured by axis-traction with the forceps, as will be described in a succeeding paragraph.

Flexion and anterior rotation may be further facilitated by the posture of the patient; thus, if the back of the child be turned toward the left side of the mother and the occiput tends to rotate posteriorly, the mother should be turned upon her left side, with her thighs flexed and her shoulders bent slightly forward. This posture causes the fundus of the uterus, containing the body of the fœtus, to fall toward the left side of the mother's spinal column, as it will be remembered that the uterus normally occupies a position of right lateral obliquity in the abdomen of the mother. This movement of the fundus from right to left, by gravitation, favors the turning of the occiput from left to right, and thus anterior rotation of the vertex is expedited. If the child's back is directed toward the right side of the mother and the occiput seems about turning toward the sacrum, the mother should be placed upon her right side, with her body flexed as has been described and her right side propped up from the bed by means of pillows. Gravitation of the fundus is thus favored, and anterior rotation is more likely to occur.

The posture often instinctively assumed by women, namely, that of kneeling strongly forward upon the bed, is one that favors flexion and anterior rotation. The fundus of the uterus falls forward, the head tends to flex and descend into the pelvic cavity, and the long axis of the fœtus corresponds more perfectly with the direction of the axis of the pelvis.

In addition to posture, constant external pressure against the vertex sometimes favors anterior rotation of the occiput. Thus, I remember having seen a case so treated in the wards of a foreign hospital; the patient was placed upon her side and a small bag filled with sand was laid upon the abdomen against the vertex.

We now come to consider the last of the three conditions upon which anterior rotation depends, namely, the expulsive force of the uterus and abdominal muscles, and the resistance of the pelvic floor. If the former is deficient, a suitable stimulant to the nervous system is indicated: *thus tea, coffee, alcohol and quinine* are most available; it is rarely necessary to employ ergot, and exceptionally the faradic current of electricity has been found useful. A narcotic that causes labor to cease absolutely for a time, while the patient sleeps, has often been found of value, the patient on awakening rousing to renewed activity. Direct stimulation of the uterus by rubbing the abdomen, and by pressure exerted upon the head in the axis of the pelvis, may carry to a successful parturition a labor lingering in its last stage. Again, anæsthesia of a moderate degree may temporarily remove the depressing influence of pain and cause renewed uterine activity.

While such expedients are frequently successful, yet the forceps is very often the last resource of the practitioner. In this, as in all forceps deliveries, two methods are to be distinguished. One is, that which all that use forceps desire to carry out, namely, the application of the blades accurately to the sides of the child's head; this requires a forceps modelled after French instruments, or shaped like the familiar blade devised by Davis, of London.

The other method of applying the forceps is that recognized as a valuable expedient, although not the ideal method of operating; this is the application of the forceps to the sides of the pelvis, and suggests the employment of an instrument modelled after the forceps of Simpson, of Edinburgh. In the first instance, forceps and head rotate together; in the second, the head rotates in the forceps, the blades remaining in the axis of the pelvis at the sides of its cavity. The first method requires for its safe performance a very accurate diagnosis of the precise location of the occiput; this will usually require anæsthetizing the patient and the introduction of nearly all or of the entire hand within the vagina. In the second method the occiput may not be definitely located, although its absence from its usual location may have been determined. The forceps is then applied to the sides of the pelvis, traction is made gently with the pains, and between the tractions the grasp of the forceps is relaxed, the head rotating within the forceps-blades, so that each application is virtually a new one.

Neither use of the forceps is skilful that does not at the same time employ axis-traction. All obstetricians are familiar with the simple manipulation of performing axis-traction with the hands, grasping the handles of the forceps with one hand and raising them, while the other presses downward and backward upon the instrument at the shank. If the case be a difficult one, this requires for its successful performance very considerable strength in the hands and wrists. The axis-traction forceps of Tarnier and those modelled after it represent an established method of securing axis-traction in these cases. The Tarnier instrument, however, is not convenient for the ordinary exigencies of confinement; it is too heavy, too large, and too expensive. Poullet, of Lyons, in a thesis described the application of the tapes as tractors to secure axis-traction. Many had already employed this, or a similar device, by passing a tape or cord around the shank of the forceps, and forming a loop into which the foot of the operator could rest, and by downward traction assist in the delivery. Poullet has modified and made more simple his use of the tapes, as shown in his most recent instruments. I applied the tapes, as first suggested by Poullet, to the Simpson forceps for the purpose of meeting the indications in those cases in which the occiput tends to rotate posteriorly, and in which the Simpson forceps applied to the sides of the pelvis seems most clearly indicated. The tapes have been similarly attached to the Davis forceps for cases in which that instrument seems most suitable; my experience leads me to prefer the Tarnier forceps in cases in which the instrument can be applied accurately to the sides of the head.

In using the forceps with the tapes no extra device for holding the instrument tightly upon the head is necessary. As traction is made, the tapes tend to draw the blades together; thus, in using the Simpson forceps, care should be exercised that the blades do not approach too closely.

In using either form of instrument, but moderate force is needed to effect delivery, provided axis-traction be made; the failure to perform axis-traction accounts for many of the difficult and dangerous cases of forceps delivery. The head should be kept thoroughly flexed during its exit from the genital tract; the use of axis-traction has largely done away with that function of the forceps said to favor rotation. No one would attempt to forcibly twist a vertex in the pelvis; the difference between traction in the axis of the pelvis and the attempt to deliver without such traction can never be appreciated without a practical experience with the two methods. The former is a difficult, tedious, and laborious task; the latter is a matter of much less difficulty. As illustrating the method of favoring rotation by axis-traction with the Simpson forceps the following case, reported originally in the first volume of the *Philadelphia Hospital Reports*, may be described:[1]

M. H., thirty-six years, an Irish domestic, unmarried, a unipara, was admitted to the hospital October 16, 1889, in a fairly good condition. While awaiting delivery, she suffered from numerous severe attacks of asthma, and was found to have emphysema, with some dilatation of the right ventricle. Examination of the heart revealed no valvular lesion, and examination of the urine showed an absence of albumin and of casts. For the relief of the asthma, grindelia robusta, potassium nitrite, and soda, with chloroform-inhalations, were employed. During the woman's stay in the obstetric ward her general condition did not improve, the attacks of asthma increasing in frequency, the patient becoming anæmic, irritable, and weak. About three weeks before labor, albumin in considerable amount was found in the urine, and about a week later the legs and feet became œdematous.

Labor began Tuesday, December 24, at 10:30 P.M., the patient reaching the Maternity ward at 10:30 P.M., December 25, 1889. At this time she was weak and irritable; she suffered from dyspepsia, and complained of pain in the back. The os was patulous to one finger; no presenting part could be felt, polyhydramnios being present; the uterine contractions were infrequent, of slight force, but caused great suffering. The first stage of labor lasted sixty-two hours, the general condition of things remaining much as described; the abdomen was enormously distended, tense, fluctuating; the fetal heart was distinctly heard low down in the right flank. The position of the fetus could not be made out by palpation. The patient became weaker, the pulse losing in volume and increasing in frequency to 115. At an early hour in the morning of December 28, the membranes ruptured, and a large amount of greenish liquor amnii escaped, but the head, which presented in the right occipito posterior position, prevented the escape of all. It was now found that the woman's bladder was full of urine, and catheterization was necessary. Still the head failed to descend through the pelvis, which was not markedly contracted, the measurements being: Spines, 23.5 cm.; iliac crests, 26.5 cm.; external conjugate, 18 cm.; right diagonal, 22 cm.; left diagonal, 21 cm.; trochanters 28.5 cm.; circumference, 85 cm.

The contractions of the uterus diminished in force, and at 12:30 P.M., December 28, the patient was anæsthetized with chloroform; Simpson's forceps, with the Poullet tapes attached, was applied, and the head delivered. The cord was wound twice around the neck. Delivery was difficult, consuming considerably over an hour; occiput remained posterior until just before delivery, when it quickly rotated forward. The grasp of the forceps was relaxed between the tractions to allow rotation. Double episiotomy was practiced and no considerable laceration occurred.

In bringing this paper to a conclusion, I desire first to draw attention to some errors that I think not uncommon in the treatment of these cases. Of primal importance in this report is the neglect of the effort to measure the patient's pelvis when possible, and when this is not practicable to estimate the comparative sizes of the head of the child and the mother's birth-canal. In this the profession must educate its patients, and this can be *done only if methods of examination* are conducted without exposure, without violence, and in a kindly and skilful manner. It is my custom to teach students to examine the pelvis, diagnosticate the position of the child and its presentation, and ascertain whether the head is likely to enter the pelvis readily, while the patient remains covered with one thickness of linen. We can no longer comfort ourselves with the remark that American-born women rarely have contracted pelves; this statement is not strictly true, and the large number of foreigners coming to our country show frequent examples of varying degrees of pelvic malformation. The skilful obstetrician, by his knowledge, avoids prolonged and disastrous labors, and such good results are impossible without a skilful examination of the pregnant patient. If a large head be detected at the brim of the pelvis, scarcely able to enter, and showing a disposition to rotate posteriorly, it will be found better practice in many cases to perform the conservative Cæsarean section, saving the lives of mother and child, rather than subjecting the child's life to great risks and exposing the mother to serious injury in delivery.

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[1] Philadelphia Hospital Reports, vol. i, p. 229.

I desire, secondly, to draw attention to the efficacy of posture in favoring rotation of the occiput when the head has entered the pelvis. Whether it be that the patient lies upon the side toward which the occiput is pointing, or whether she inclines the pelvis forwards, I am convinced from observation that posture is a valuable adjunct in the conduct of such cases. I desire also to criticise that method of examination consisting in the introduction of but a portion of one or two fingers in the effort to make an accurate diagnosis of the location of the occiput, and to favor its anterior turning. The practitioner should prepare himself to apply the forceps if necessary, and then anæsthetize his patient to obstetric anæsthesia, preferable with chloroform; he should introduce so much of the hand as may be necessary to make an accurate examination of the entire vertex. In the intervals between the pains he will be able to favor anterior rotation, and when he has thus brought the vertex in front of the middle of the pelvis, without removing the hand the forceps may be applied and the labor terminated.

Third. The forceps is often applied too soon, thus neglecting one important factor in anterior rotation, namely, the resistance of the pelvic floor. If the forceps be applied before the head has had an opportunity to rotate upon the pelvic floor, its posterior turning is often favored by the instrument rather than its anterior rotation. On the other hand, the forceps is often applied too late, when flexion has become impossible by reason of the persistence of partial extension, the head becoming impacted upon the pelvic floor in this unfavorable position. The life of the child has frequently been lost in such cases before the final effort at delivery is made, and when such is the case craniotomy is often the only rational procedure.

In conclusion, I would urge the following as points of importance: First, the adoption of the simple nomenclature already stated, which has borne the test of usage on the Continent of Europe, and which will render more comprehensible the mechanism of labor. I refer to the designation of two positions only for each presentation, anterior or posterior rotation being designated, as the case may be. Second, the importance of pelvimetry and of the comparative estimation of the sizes of the head and the pelvis is paramount; by the second of these I mean the careful estimation as to the degree of engagement of the head, and if the head has not engaged, pressing it gently into the pelvis by supra-pubic pressure, the patient being, if necessary, partially anæsthetized. Third, when the head is proportionate in size to the pelvis, and lingers upon the pelvic floor by reason of failure in expulsive force, the child's life and also the mother's safety being in danger, the forceps should invariably be used with axis-traction. The forceps should be used in accordance with the possibilities of the case, and that form of instrument should be selected that was intended for such possibilities. Whenever practicable, forceps designed to be so applied should be accurately placed upon the sides of the child's head, axis-traction made, the head and the forceps rotating together anteriorly. When such accurate apposition is impossible, forceps modelled for application to the sides of the pelvis should be employed with axis-traction, the forceps making as little pressure as possible upon the head, the blades being relaxed after each traction so that rotation anteriorly may occur between the blades. Fourth, a conservative Cæsarean section may be indicated if a living child, with large, firmly ossified head, presents with a posterior rotation of the occiput, the head failing to descend into the pelvic cavity; craniotomy may be indicated if such a child has perished during its entrance into the pelvis.

THE IMPORTANCE OF SURGICAL TREATMENT FOR LACERATION OF THE CERVIX UTERI.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY AUGUSTUS P. CLARKE, A.M., M.D.,
OF CAMBRIDGE, MASS.

The opportunities now afforded to the gynecologist for studying the effect in any case of laceration of the cervix uteri leave but little doubt that treatment is a most important subject for consideration. Experience has, however, demonstrated that the local application of the various agents which from time to time have been suggested as being remedial or beneficial is at best but a temporary expedient. Whenever a laceration occurring at the cervix extends through the internal and external muscular tissue, the mucous coat lining the canal suffers materially from the violence. The plicæ palmatæ which have been described under the term arbor-vitæ undergo serious disturbance in their relation to the other tissues with which they are connected. This condition often leads to congestion, thickening and to induration of the parts involved and to more or less hypertrophy and malnutrition of the higher uterine segments, and to changed relation and to displacement of the lower cervical zone. When laceration occurs at the cervix it is not only that the muscular and the mucous structures are injured but it is also that the mucous glands which so freely abound in the uterine canal become disturbed in their normal functional activity. It is especially the cervix uteri about the arbor vitæ that the mucous follicles which when in a healthy condition afford only a moisture for the maintaining of their function, give rise to the formation of an altered, perverted or diseased secretion. The arteries and arterials entering into these structures often become preternaturally developed or enlarged; there will often be found a greater interlacing or anastomosing of these vascular structures. This condition may lead to more or less local œdema, which the venules and lymphatics will fail to overcome. The structure of the uterine nerves, particularly those derived from the hypogastric and sacral plexuses, become so deeply involved that not only the parts in immediate contact with the torn or injured surfaces become the source of much trouble but all the tissues forming the uterine body may continue so heavily congested and become so thickened, indurated and globular as to be recognized only as that condition which has so aptly been termed, subinvolution of the uterus.

The treatment best adopted for the relief of the suffering which occurs in every such case, according to my experience, is that afforded by surgical measures. The history of the following case illustrates in some measure the importance of such treatment.

Mrs. C., aged thirty-six years, descended from good stock, and was originally of sound constitution and in good health. Her embonpoint, though fair, was not excessive. She was a sextipara. The eldest child was eleven years old and the youngest three years. At the time I was first called, Dec. 14, 1891, there had been a most profuse uterine hæmorrhage. On my arrival I found that the patient was blanched; her pulse exceedingly weak and easily compressible. The cardiac sounds were feeble and gave indication that there was some dilatation and perhaps fatty degeneration of that organ. The patient had, for the most part, been regular in her catamenial flow, though she had suffered at times from unusual loss of blood. There was no evidence in the history of the case to show that the patient was suffering from the effects of abortion or that she was pregnant, or at any time had ever suffered from a miscarriage. A few days immediately preceding the date of my attendance she had been doing some extra household work and had attempted to lift some heavy articles of furniture. This may have been the exciting cause of the hæmorrhage. Vaginal examination revealed that the cervix was patulous, that it was hard and unyielding, and that multiple cervical laceration had evidently long existed. There was also an old perineal laceration which might have contributed somewhat to her inconvenience. By tamponading with iodoform gauze, the hæmorrhage was brought under immediate control. Next day a thorough vaginal examination showed that there was subinvolution; the depth of the uterine cavity was six and a half inches; there was also cicatricial ectropium of the cervix to an unusual degree. For some days the use of the tampons was continued, though there was no further hæmorrhage. The patient subsequently suffered severely from facial and super-orbital neuralgia, sometimes on the left side, and at other times on the right. The patient also suffered from sciatica appearing on the right side; the occurrence of this affection had, from time to time, heretofore added much to her illness. Full and repeated doses of morphia and of other opiates often afforded her marked relief; stimulants were well borne and were frequently required to overcome the narcotic effect of the soporifics.

Dec. 22.—The patient suffered from a severe attack of gastralgia, which yielded only to morphia hypodermatically administered. Under careful regulation of diet, and with the judicious use of stimulants the patient from this time forward gradually improved, though she was kept in bed in consequence of the local inconvenience from which she suffered every time she stood or was in the erect position.

Feb. 3.—With the assistance of Dr. A. H. Tuttle, the patient was etherized and placed on the table for surgical treatment. All details of the operation were carried on under strict antiseptic precautions. The uterine cavity still measured six and one half inches. This was first curetted; after this the cervix was repaired. Aseptic animal sutures were employed. The mucous tissue of the lacerated perineum was then dissected up as far as the sulcus on each side; coaptation of the torn surfaces of the perineal tissue was effected by the employment of the same kind of aseptic animal suture. The deep sutures were first inserted; each tissue was brought together in its proper order, last of all the edges were brought together by the buried suture and the parts united were sealed with collodium and iodoform. The whole was protected by dressings to the cervical, vaginal and perineal tissues. The patient rallied well from the ether, though more than the average quantity had to be used to overcome all rigidity of the genital tract. The bladder was catheterized at regular intervals to prevent the repaired tissues from becoming contaminated by the discharge of the urine. The patient suffered very little from the effects of the operation; there was no increase of temperature. She experienced some trouble from a return of sciatica, though this occurred on the left instead of the right side. Neuralgia occurring in the face and in other parts was at intervals complained of. She took nourishment and stimulants freely until the evening of the twelfth of February, when she began to suffer from dyspnœa; the pulse at that time became irregular, and the heart's action at intervals was labored. Though the patient was able to continue the use of nourishment and stimulants she died during the evening of the fourteenth. Autopsy twelve hours after death.

On opening the chest the heart was found to have undergone more or less fatty degeneration; both ventricles were somewhat dilated. The left ventricle contained an antemortem clot. The lungs were congested. The liver gave indication that it was undergoing also fatty degeneration; the spleen, however, was normal. The right kidney was congested and was darker than normal; the left one showed that marked organic changes had for some time been going on, and that it was approaching to a condition of parenchymatous inflammation. At the cervix uteri, where the lacerated tissue had been brought together by the operation for repair, the parts were in a healthy condition; the line of union had nearly healed. The uterine canal also presented a healthy surface; it showed that all the fungoid granulations had been removed by the curetting. The uterus showed that there had taken place a rapid retrograde metamorphosis of tissue, for the canal itself measured now scarcely four inches in depth. There had already taken place a strong line of union at the coapted parts in the torn perineum. There was no indication, about the parts, that any sepsis had occurred. The autopsy, which had been carefully conducted, did not give the slightest indication that there had been any septicæmia or that other morbid process had occurred as the result of the surgical measures undertaken for the patient's relief. The autopsy further showed that there was no pelvic or uterine tumor and nothing to indicate the existence of a cancerous development, though such had been believed to have existed by some of her previous medical advisors.

In view of all the facts connected with the case it seems fair to conclude that the cause of the death was owing to the excessive loss of blood which occurred immediately previous to my first visit. This loss of blood necessitating the horizontal position which had to be so long assumed must have hastened the degenerative changes that had before been insidiously developing. It is also fair to infer that had the operation for her relief been instituted before the lapse of so many years, during which she had suffered from hæmorrhage and from other untoward symptoms, her life might have continued a much longer duration. In another case of cervical laceration occurring during labor the patient suffered much from endocervicitis and from uterine hæmorrhage. After coming under my care she had intended to submit to an operation but had delayed the matter owing to a succession of cases of illness that appeared in her family. The patient suffered much from the subinvolution and from the local inconvenience whenever she travelled or was about her house. She had grown stout, but her flesh was soft from a lax habit of the body. Auscultation revealed that though there was no distinct cardiac murmur the two sounds were weak and that dilatation and fatty degeneration had begun to take place. Another severe uterine hæmorrhage so prostrated her that she had to be confined for some weeks to her bed. She suddenly died from degenerative changes occurring in the cardiac tissue. In this case there can be no doubt that had surgical measures been adopted for her relief before she had sustained so much loss of blood, the fatty degeneration of the heart's structure would not have been accelerated by the influences of the recumbent position which she also, from time to time, was frequently enforced to take. In cases in which the disturbance is greatest at the cervix uteri operation for repair will often yield most favorable results. In such cases it is surprising to see how speedily the thick and indurated tissue at the cervix softens and relaxes under the influence of the stimulus imparted by operative interference. The venules and lymph vessels which seemingly, had long since lost or suspended their function, take on an almost immediately, for effecting this accomplishment, renewed activity. In a case of cervical laceration to which I was recently called, there was but little that could be expected to be achieved by the adoption of surgical measures on account of the unusual hypertrophy of the tissues, which had taken place, and also on account of the exhausted condition of the patient. The operation however, was undertaken. I was happily surprised to find that I had succeeded in effecting so much toward the reduction of the induration and toward bringing about restoration of the cervix. In cases of cervical laceration before the structures become indurated or cicatrized the ectropium or eversion of the tissues of the os uteri may be the chief indication for which surgical treatment is required. Eversion, when present to any great extent, almost always gives rise to much local suffering, especially whenever the patient assumes the erect position. Such a condition of the cervix is sometimes the cause of sterility; it often interrupts the marital relation. In a case to which I was called in consultation some two and a half years ago the tissues of the os uteri so projected forward as to give the impression to the medical attendant, when the examination was made without the help of the speculum, that a fœtus at the term of four months or more, had engaged the cervical canal. This patient had been the mother of four children, during the birth of the last of which laceration of the cervix occurred. As a consequence of this injury, repeated hæmorrhage had been a troublesome factor; this had often come on without apparent connection with the influence of the catamenial flow. This case under temporizing treatment had dragged on for upwards of three years. A resort to trachelorrhaphy was followed with marked amelioration. Emmet, as it is well known, long since expressed his belief that nearly all cases of uterine epithelioma or cauliflower growth have their exciting cause or origin in laceration of the cervix uteri. The cancerous development according to Emmet, arises from prevented nutrition in nature's attempt to repair the injury.

Professor Graily Hewitt, of London, and other eminent authors have expressed their opinion that injury to the cervix by labor, is the predisposing cause of uterine cancer. In a case which has recently come under my care the history showed that there had been a cervical laceration dating back some ten years. The patient's age was forty-six years; she was a multipara. There had been considerable induration and eversion. Nothing from the history could be learned that cancer had ever appeared in her family. The patient, for several months previous to the manifestation of cancer in the cervix uteri, had dwelt in a family in which two cases of cancerous disease had occurred. In another case to which I was called, the patient was a primipara; her age was twenty-nine years. There was no evidence that malignant disease in either branch of her family was hereditary or that in either of them a case of such disease had ever appeared. One year before she had experienced the initial symptoms of cancer of the cervix she had devoted much time in the care of a friend who was suffering from cancer of the breast. She had incurred a cervical laceration during the labor which took place five years before. She experienced considerable inconvenience from the effects of the laceration, and had from time to time received local treatment; no operation, however, for repair of the cervix was ever undertaken. In many cases of laceration of the cervix induration that takes place is limited to an exceedingly small section; the eversion may give but little trouble. In such cases there may have been no arrest of the action of the absorbents that are engaged in the removal of the provisional material incident to pregnancy. In some cases of this class, it would seem that the occurrence of laceration increases the activity of the absorbents, or at least helps to expose them to the agency of the materies morbi or to that of the disease germs, which at any time may gain admission into the vaginal introitus. As more evidence has of late been adduced tending to show that cancer in its various manifestations is a contagious[1] affection a much stronger plea than heretofore, can now be offered in support of the advantages to be derived by the resort to the operation for repair of the cervix in which laceration has occurred, though it be of a minor grade.

THE MANAGEMENT OF CANCER OF THE UTERUS, COMPLICATED BY PREGNANCY, WITH REPORT OF A CASE.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, June, 1892.

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Pregnancy and uterine cancer are conditions, fortunately, rarely associated. Winckel saw eight cases of cancer of the cervix uteri in a total of fifteen thousand cases of pregnancy. Stratz saw twelve in seventeen thousand nine hundred cases. Sutugin saw two in nine thousand, or, in other words, out of nearly forty-two thousand cases of pregnancies, observed in three great obstetric clinics, only twenty-two cases of cancer of the uterus occurred as a complication, roughly, one case in every two thousand cases of pregnancy. Like all statistics these have only a relative value. Consulting obstetricians see relatively more cases than do general practitioners, and apparently see as diverse results of treatment. For example, the much-to-be-lamented late Dr. Fordyce Barker reports, in a discussion, three cases which were delivered, without any unusual complications, of living children at term, the mothers also recovering from childbed without serious drawbacks. Other obstetricians of equal skill have seen this complication followed time after time by death of the mother, undelivered. Naturally, from their own experiences, these gentlemen cannot come very closely together in discussing methods of treatment.

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[1] Observations of M. Guelliot and M. Arnaudet. *L' Union Medicale, 1891.*

If we take a wider view of cancer of the uterus and pregnancy, with regard to the mother, out of twenty-seven cases seen by Puchett, five died during labor undelivered, nine shortly after delivery, ten recovered from the effects of labor, and in three the results are not stated. Leaving out of consideration the three cases in which the results were not known, we have a maternal mortality, from the delivery, of fifty-eight per cent. plus.

Cohnstein in another considerable series of cases, where gestation was completed before labor occurred, found an average maternal mortality of 57 per cent. Hermann out of one hundred and eighty cases found a maternal mortality of 40 per cent., and that 20 per cent. of these died before delivery took place. To consider the subject more accurately, from this large number of cases, out of nearly three hundred women suffering from cancer of the uterus, and in labor at the end of gestation, 52 per cent. died undelivered or never left their beds. Hermann also showed a maternal mortality of 31 per cent. where the labor was practically normal. According to Gusserau and Cohnstein, abortion or premature labor occurs in 35 per cent. of pregnant women with cancer of the uterus. The maternal mortality is not materially lessened by abortion and premature delivery. If we go a little farther in our analysis of this frightful mortality, we find, first of all, that 25 per cent. died undelivered from septic infection brought about by a putrid fœtus or from shock and exhaustion. Sepsis after delivery of the fœtus, from absorption through large areas of unhealthy and non-cicatrizing granulations, or from retained placenta, is responsible for another large proportion of the deaths. Post partum hæmorrhage another portion, and rupture of the uterus still another. Yet with all these dangers menacing the mother's life, by this complication of pregnancy, we still have another, i.e., the stimulus of unusual uterine blood supply to the cancerous mass, encouraging rapid cell proliferation and infiltration of the vagina, broad ligaments and rectum. Finally, few of the majority who survive the ordeal of delivery live three months.

For the children are the conditions less favorable? Of the above series of cases only 33 per cent. were born living, and hardly 20 per cent. lived until the mother left the childbed. Here then we have 20 per cent. of living children at the threshold of their existence and over half without mothers.

I know of no condition of disease that presents a darker or sadder image than does this one. An image rarely seen to be sure, yet none the less frightful, an image that has not, it is to be feared, received the attention in text-books and from teachers of obstetrics and medicine that its moment deserves. I have tried to outline fairly the course that cancer of the uterus, when complicated with pregnancy, has taken in the past, in order that we may come to a clearer conception of our duty to these cases in the future. If the foregoing shows anything, to my mind, it shows that we cannot afford to wait for emergencies, delivery, abortion, and septic infection to arise, if we ever expect to reduce the mortality of this dreaded condition.

If the gentlemen of this Section were called upon to state their individual preference for the treatment of operative cases of cancer of the cervix uteri in two words, I am confident that the larger number of replies would be vaginal hysterectomy, rather than high amputation, total extirpation, or partial excision. It is pertinent to ask why shall the principles of treatment be modified because pregnancy exists? I hold that unless exceptional circumstances are present that total extirpation should be the rule, and the operation should be done at the earliest moment.

Cases of cancer of the cervix uteri, associated with pregnancy, so far as treatment is concerned, may be classified in three series.

1. Cases where the disease is confined to the uterine tissue, no infiltration in vagina, bladder, rectum or broad ligaments, and the uterus has not reached a size incompatible with vaginal hysterectomy, say up to the end of the fourth month of pregnancy.

2. This series comprises all cases presenting the features of the first series, except that the removal of the uterus by vaginal hysterectomy, because of the late period of gestation, after the beginning of the fifth month, is precluded.

3. This series comprises all cases at any period of gestation where total extirpation of the uterus is impracticable.

In the management of the first class of cases, associated with early pregnancy, abortion, either accidental or induced, has already been shown to be surrounded by many dangers, and notwithstanding its successful employment by a few operators, as a preliminary to vaginal hysterectomy, it is not a procedure to be recommended.

High amputation of the cervix in these cases, in the majority, brings about abortion and its attendant dangers, and is even less successful than in the non-puerperal uterus, in regard to final cure.

Allow me to illustrate to you by the following case from my own practice the management of a case of the first group:

Mrs. A. H., aged 27 years, native of United States, housewife by occupation. Referred to me by Dr. A. V. H. Smythe, of Amsterdam, N. Y. Admitted into Albany Hospital Sept. 23, 1890.

Family history: mother died in childbirth; father, brother and three sisters living and in good health. Personal history: menstruated at the age of 13; married at 15; first child born ten years ago, second seven, and third five years ago, with one miscarriage between second and third child. About one year ago patient noticed some abnormal condition of menstruation, in that it was more frequent and profuse. This condition has constantly grown worse. Has had a very intelligent line of treatment given her, but without relief. Has some lancinating pain through pelvis, has lost in flesh, is anæmic, does not rest well, appetite feeble and realizes that she is gradually growing weaker. About two and one half months ago she was confined to her bed for three weeks, owing to her great exhaustion. Patient has always done hard, manual work, and connects her trouble with the especially severe tax upon her strength. Dr. Smythe sent her to me with the diagnosis of carcinoma of the cervix. He tried, and made various applications to the growth, but without any substantial control of the hæmorrhage, and with a constantly increasing development of the disease.

On examination I found a cauliflower-like excrescence protruding very uniformly from the anterior two-thirds of the cervix, coming out, as it were, from a bi-lateral laceration, not particularly sensitive to the touch, but having a hard, indurated base. Pelvis apparently in a healthy con dition, and no infiltration of the vaginal walls. She stated that for the past three months she had flowed almost constantly, accompanied by a very nasty odor. Bi-manual examination disclosed a uniform enlargement of the body of the uterus, to the size of a small orange, and believed to be an advance of the disease to the fundus. When asked as to the possibility of her being pregnant she did not think it possible. Was not nauseated in the same manner as with her other children, had no pain in her breasts, nor in any way did she have the symptoms of her previous pregnancies. I felt that I was justified in endorsing the doctor's diagnosis, with the possibility of her being pregnant, and recommended most earnestly a vaginal hysterectomy. This the patient, on explanation, was anxious to have done, in which conclusion her husband readily consented.

Operation was performed September 30, 1890. Was in no way complicated until I had liberated the uterus quite entirely when I found it was even somewhat larger than I had mapped out in the previous bi-manual examination. On examining the specimen after removal, the whole cervix was found implicated in the growth, and the body of the uterus contained a fœtus of about two and one-half months; ovaries and appendages were not removed. Patient made an uninterrupted recovery with the exception of an abscess that formed somewhere in the stump and was detected October 2, opened, and glass drainage tube introduced, parts thoroughly washed, some slough removed; discharge quite offensive for two or three days, when she went on to a rapid recovery.

I cannot but believe that the sloughs and the offensive discharge were the result of the use of the forceps, the latter being used instead of ligatures in the operation. This patient has remained in perfect health since her recovery, is able to do her housework, is bright and cheerful, and in every way quite happy; husband is loyal and contented.

The specimen was referred to Dr. W. G. MacDonald who has kindly furnished me with the following microscopical report. I wish also to state here that I am greatly indebted to him for the statistics contained in this paper.

"The specimen furnished for examination was a pregnant uterus removed with its contents by vaginal hysterectomy. An incision in the long axis showed the uterine contents. The entire preparation had been hardened in alcohol. The entire cervix is envolved in tissue distinctly harder than normal. The os uteri and inferior portion of the cervix is completely replaced by a soft, spongy growth resembling cauliflower. Portions of this growth were further hardened, stained and examined. The sections presented a distinct alveolar, or, more accurately, tubular structure, with abundant small-celled infiltration, especially in the periphery of the growth. With higher amplifications these alveoli or tubules show that they are closely packed with epithelial elements, chiefly columnar in character. The cellular infiltration resembles closely that seen in scirrhus of the breast. From the foregoing the pathological diagnosis is that of adeno-carcinoma of the cervix uteri."

The points of interest in this operation seem to be as follows: She had irregular menstruation, hæmorrhage, as it were, for over a year, yet when the disease must have been pretty well advanced she became pregnant. Was this a case in which the fœtus would have gone on to full time and could then have been delivered by abdominal section, and what would have been her chances as regards the development of the growth? Would it not have placed her among the hopeless cases, with the vaginal walls implicated and the pelvic glands also infiltrated? I would not hesitate in recommending the same line of treatment to another patient similarly situated. The favorable termination of this case has been especially gratifying to me. From the history of the case, and other similar ones operated upon, it will be seen that one of the chief difficulties lies in the uncertainty of diagnosis. An absolute diagnosis of pregnancy can be made in only very exceptional cases before the fourth month, when the condition complicates pregnancy. Before that time the uterine enlargement will most often be attributed to invasion of the fundus by the new growth.

The technique of the operation, owing to a degree of laxity of the tissues associated with pregnancy, is not made seriously embarrassing.

Antro- or retroversion of the uterus may be made either difficult or impossible in consequence of the volume of the uterus. The placing of ligatures on the broad ligaments may be impossible before the removal of the uterus from lack of room, but clamps may be employed either temporarily or permanently. Greig Smith, who always employs clamps, thinks that the operation is made easier when complicated by an early pregnancy.

There have been, including this one, sixteen cases of vaginal hysterectomies for cancer of the cervix uteri, complicated by an early pregnancy, *i. e.*, before the end of the fourth month, in which the mortality is *nil*. These operations have been distributed among a large number of operators, Landau, Kaltenbach, Hofmeier, J. Greig Smith, Taylor, Korn, Jonas, Mary A. Smith and others. Jonas employed a modification in first inducing abortion, and in a few days proceeding to hysterectomy, but complications reported by him, and reasons already given, do not encourage this method of practice.

The management of the second series, operative cases of cancer where pregnancy has so far advanced that vaginal hysterectomy is precluded, by the volume of the uterus, presents many problems for our consideration. Some of these present peculiar features in individual cases. For example, a woman with no living children presents herself for treatment at the end of the seventh month of gestation, for cancer of the cervix uteri. She is anxious to have a living child. Shall we follow the rule of surgery, cancer once diagnosticated, immediate operation, or shall we wait, keeping the case under observation, until gestation is completed? Knowing the rapidity with which carcinoma infiltrates, under the stimulus of pregnancy, delay may place the mother beyond relief. Operation destroys the child. Undoubtedly some of these cases may be safely tided over until delivery per vaginum can be accomplished or a Porro operation done at term, followed by extirpation of the stump.

The management of carcinoma of the cervix, associated with late pregnancy, after viability, and where the new growth is rapidly proliferating, will require, as a rule, the total extirpation of the uterus, by the method of Freund, as modified by Tweifel. First, a Porro operation, treating the pedicle by an elastic ligature and dropping it, to be followed by an immediate vaginal extirpation of the stump. Here, perhaps, the early operation may prejudice the chances of living in the child, but they certainly increase very materially the chances of ultimate recovery of the mother.

The third group of cases of cancer of the uterus, inoperable ones, will necessarily be seen very infrequently. Here more latitude may be allowed and the interests of the mother may be sacrificed in a degree for those of the child. Seldom will active interference be demanded unless from feebleness of the fœtal heart sound, or feeble movements showing that the fœtus is not doing well. At term the chances of delivery of a living child should be carefully considered, either naturally or by the aid of forceps. When delivery presents great difficulties, or seems impossible, the Porro operation seems indicated above all others, and may present advantages even if the child is dead.

Briefly the treatment of carcinoma of the uterus may be summarized as follows:

In all operable cases where the pregnancy is not advanced beyond the fourth month, do a vaginal hysterectomy at once. In all operable cases between the fourth month and term, as a rule, complete extirpation of the uterus by Freund's method, as modified by Tweifel, and in inoperable cases delivery at term or a supravaginal hysterectomy of the pregnant uterus, Porro's operation.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Section on Orthopædic Surgery.

Stated Meeting May 20, 1892.

Henry Ling Taylor, M.D., Chairman.

CONGENITAL DISLOCATION OF BOTH PATELLÆ.

Dr. S. Ketch presented a little girl who, at first glance, seemed to have only knock-knee, but on flexing the limbs, a complete dislocation of the patella downwards and forwards was observed, and the dislocation could be readily reduced by extending the limb. The deformity was much more marked on the right side. The condition was probably congenital, although it had not been noticed by the mother until recently, as the child was able to walk with no more difficulty than is observed in an ordinary case of knock-knee. Dr. Shaffer had suggested that this was the opposite of the condition which he had described under the head of Elongation of the ligamentum patellæ at the last meeting of the American Orthopedic Association.

Dr. John Ridlon said that he had seen three such cases in the practice of the late Dr. Thomas. The treatment had consisted in hammering the deficient condyle with an egg-shaped wooden mallet, and in two of the cases, the treatment had already effected sufficient development to prevent dislocation, and in the other case the treatment had only been just begun.

Dr. W. R. Townsend said that he had presented some time ago to the Surgical Section of the Academy of Medicine a colored girl who could, by muscular action, produce at will a complete dislocation of both patellæ, either to the outer or the inner side. A knee-cap was applied, and an effort made to restrict the movements of the fibres of the vastus externus and internus which seemed to be abnormally developed. She was kept under observation for six or eight months, and at the end of this time, she could not produce the dislocation at will, and the dislocation occurred quite infrequently.

Dr. N. M. Shaffer said that in his case of elongated ligamentum patellæ, the man had had a fall, which was followed by an outward dislocation of the patella on the right side. After consultation with several other surgeons, in view of the fact that the inter-condyloid notch was filled by an exostosis, it was considered best to make no attempt at reduction, and at present, although the patella lies on the outer aspect of the joint, the man is perfectly able to walk ten or fifteen miles a day. In the case just presented, he did not think the external condyle was deficient, but the ligamentum patellæ was so short that the patella, instead of passing over the trochlea, is drawn down to a point where, owing to the knock-knee, it is very easily dislocated. On this account, he thought that treatment directed towards securing an elongation of the ligament would be more apt to prove successful, than simply hammering the outer condyle.

Dr. Ketch in closing the discussion, said that he agreed with the last speaker as to the inadvisability of resorting to operative measures. Not long ago he had seen a young lady with a somewhat similar condition. Twelve years before the patella had been dislocated by muscular action, and this had again occurred shortly before he saw her. Reduction was easily affected by extending the limb.

Dr. Royal Whitman presented several patients.

Case 1.—A girl, fourteen years of age, to illustrate the appearances in non-deforming club foot. As in many similar cases, the history was one of awkwardness in walking for many years, with increased pain and discomfort during the past six months. She presented the calluses on the balls of the feet, the contraction and tenderness of the plantar fascia, and the limitation of dorsal flexion to which Dr. Shaffer had called attention in his original communication.

Case 2.—A woman, fifty-seven years of age, who had suffered from chronic rheumatism for many years. On the left side the contraction of the plantar fascia had thrown the foot into a position of equino-varus. There was no deformity of the right foot, but on both sides, a well marked limitation of dorsal flexion. The electrical reactions were normal. The condition was similar to non-deforming club foot, and was apparently the result of a rheumatic inflammation.

Case 3.—A girl of fourteen, with marked spasmodic flat foot. The case was presented to illustrate the extreme and progressive deformity and disability in this class of cases which could be easily and quickly relieved by the method of treatment to which he had on several occasions called the attention of the Society.

Case 4.—A girl of eighteen with persistent abduction of the right foot. Although there was no evident deformity, the foot was held in an abducted position by spasm of the peronei and extensor longus digitorum muscles. The condition was the result of a slight sprain three months before. The symptoms were pain, fatigue and insecurity in walking. The case illustrated the condition in so-called chronic sprain of the ankle, which practically never recovered. because the foot being unbalanced by irregular muscular action, was constantly subjected to injury. When the condition was recognized, a cure could easily be accomplished by restoring the normal muscular action. The patient being etherized, the foot should be forced into a position of extreme equino-varus. All adhesions were thus broken up, and the contracted muscles were stretched. The foot was then placed in plaster of Paris, and later, by massage, exercises, and a temporary support, the patient could be completely and permanently cured.

Dr. R. H. Sayre thought that in the fourth case there might have been a fracture of the lower part of the fibula, complicating the sprain, which had been overlooked in the treatment of the case immediately after the injury.

Dr. Ketch thought that the fourth case gave evidence of a possible osteitis about the ankle joint, and this condition should be carefully excluded before adopting the treatment proposed.

Dr. Whitman said that he found no indications of an osteitis in the fourth case, and that there was no history or present indication of fracture complicating the original sprain.

Dr. Shaffer said of the second case, that the exaggerated extension of the toes, and the shortened plantar tissues were characteristic of non-deforming club foot. He had seen several cases where the symptoms had not become prominent until the age of thirty-five or forty years was reached, and then, whether there was a rheumatic diathesis or not, all the symptoms would be greatly exaggerated. Many cases showed much less deformity than that exhibited in

Dr. Whitman's case. The typical non-deforming club foot showed little or no deformity as such, unless it was sought for and found in the shortened plantar and post-tibial tissues. The lack of proper length prevents normal antero-posterior movement at the ankle, and in the tarsal joints, and the entire weight of the body falls upon the "ball of the foot" in locomotion. It is far more common than is generally supposed, and with the use of the antero-posterior traction shoe, there is no necessity whatever for a division of the resisting tissues.

Dr. R. H. Sayre thought the second case presented very much the condition found in ordinary cases of chronic gout and rheumatism, and he had noticed that after the foot had been manipulated somewhat, she was able to move it much better than before, and could voluntarily flex the ankle beyond a right angle, so that it did not seem to be a case of non-deforming club foot.

ANKYLOSIS OF THE HIP.

Dr. Irving S. Haynes, present by invitation, exhibited a specimen of this condition, which he had found in the dissecting room of the University Medical College. The subject was a man about twenty-five or thirty years of age. The limb was slightly flexed, abducted, and rotated inwards. A sinus opened about half an inch below Poupart's ligament, and one inch internal to the anterior superior spinous process. It passed backwards, soon divided into two tracts, one leading down to the front of the great trochanter, the other up under Poupart's ligament into the iliacus, and then into the obturator internus muscles; then around the middle of the outer border of the obturator foramen into the cotyloid notch, and so into the hip joint. The iliacus and obturator muscles, as well as all the muscles acting upon the hip joint had undergone extensive absorption, and fibrous degeneration. The center of the disease, and the starting point, seemed to have been in the head of the femur, but there was also a focus in the epiphyseal line of the great trochanter, which communicated with that found in the head of the femur by a sinus running through the neck, and also opened in front through one or two small openings. Another sinus seemed to have led from the acetabulum through the cancellous portion of the ilium into the iliac fossa, where the opening was surrounded by bony formations. Between the ilium and sacrum there was slight mobility of a gliding nature, which the speaker had never observed before, and which was probably intended to partially compensate for the lack of motion at the hip. There was no evidence of the disease in the capsule of the joint. The abscess cavities were limited to the absorbed portions of the iliacus and obturator internus muscles.

ARTHRITIS DEFORMANS.

Dr. Haynes also exhibited a specimen of this condition, showing erosion and reproduction of bone, with a depression in the acetabulum, and a disappearance of the ligamentum teres. The motions of the joint were slightly limited in every direction. The specimen was removed from an old subject.

THE TREATMENT OF LARGE ABSCESSES IN POTT'S DISEASE.

Dr. W. O. Plimpton presented several cases of Pott's disease with large abscesses as an illustration of the treatment which he advocated. He did not favor aspiration, because he thought after this had been done, the abscesses were likely to continue to enlarge and burrow into the tissues. While admitting that abscesses were not infrequently absorbed, he wished to deprecate the let-alone treatment of large abscesses which tend to burrow deeply into the tissues, threatening to inoculate these tissues, often causing mechanical deformities of other parts.

The first case was a boy about 12 years of age, who had had Pott's disease since he was 3 years old. The disease followed closely upon a blow from a brick. When he first came under the speaker's care last July, he was very anæmic and weak, with an afternoon rise of temperature. There was a very large abscess situated beneath the glutei muscles, and there was much deformity of the leg, viz.: apparent shortening, inward rotation, and adduction, caused by the abscess. Free incision evacuated a large quantity of fluid, together with broken down tissue. An examination with the finger showed no involvement of the joint. The diseased parts were thoroughly curetted with a Volkmann spoon, a counter-opening made and three drainage tubes inserted. After washing out the cavity with a weak bichloride solution, the superficial cavity was obliterated as far as possible by means of sutures, and primary union occurred except at the site of the drainage tubes. Two of the tubes were gradually withdrawn. The third one, in front, still remains in for drainage, although it has been considerably shortened. The apparent inequality in the length of the limbs has disappeared since the operation, and with a plaster jacket to support the spine, he is able to go to school, and to play with other children. The discharge is steadily becoming less.

The second case was a girl, 7 years old, whose disease dates back to a fall about three years ago. When first seen one year ago last January, there was a moderately large abscess, which was opened, and a tube 6 or 8 inches long inserted. The tube has been gradually shortened until it is now 3 inches long; the discharge is diminishing, and the patient's general health has markedly improved. Another case was treated in a similar manner, and has steadily improved since the operation. In all, there had been a gradual reduction of the temperature after the operation. The same precautions are observed as in any cutting operation where it is the intention of the surgeon to secure primary union, and after the operation, care was taken to keep the wound and dressings aseptic.

Dr. W. R. Townsend said that the location of the tube in the first case reminded him of an accident which occurred about one year ago. He was hastily summoned to the hospital on account of one of the patient's having a hæmorrhage. He found that a case of large psoas abscess which had been opened and a drainage tube inserted, three weeks before, had suddenly begun to bleed profusely. The hæmorrhage was arterial, and with the assistance of Dr. W. T. Bull, he cut down and found that the pressure of the drainage tube had caused a large perforation in the femoral artery. He accordingly tied the artery above and below the perforation, and the child recovered without further accident.

Dr. Ketch thought the cases presented very much the appearance of those which he had seen in the hospital when it was the rule to open all abscesses as soon as the abscess approached the surface. They did not seem to him to differ materially in their course from those where the abscess was allowed to open spontaneously, and he could not see that anything had been gained by this method of treatment.

Dr. Ridlon asked if the drainage tube had been left in for so long a time for fear that the opening would close up, and necessitate another operation. He had always thought that it was not necessary to leave in the tube more than a few days.

Dr. A. M. Phelps thought that the second case had had decided advantage over the first in being subjected to the operation at a much earlier stage. The slightest increase in an abscess, in his opinion, warranted prompt incision. He spoke emphatically because the Section had almost been committed to the idea that it was better for these abscesses to take care of themselves. But it must not be forgotten that these abscesses were originally collections of tuberculous material and that when they become infected with pyogenic germs, as almost inevitably occurs, there will be a rapid burrowing of the pus. Another reason for opening these abscesses is that they exert an injurious effect by the internal pressure of the exudate upon the carious foci in the diseased vertebræ, keeping them bathed constantly, and furnishing a fertile source of the subsequent breaking down of these vertebræ, and of a consequent increase in the deformity.

Dr. Ketch thought that the previous speaker had not correctly stated the position of the Section on this subject. He thought it would be more correct to say that they took the ground that so many of these abscesses disappeared spontaneously under proper mechanical treatment, that something more than mere accident was necessary to explain it, and that these collections of pus cause injurious pressure had not been proven. The proof of this would be found in a marked increase in the size of the deformity, but in disease of the dorso-lumbar spine, where these abscesses were the most frequent, this did not occur, and Dr. Myers had recently presented a boy who had had two large iliac abscesses disappear spontaneously, and yet there had been no increase in the kyphos, as shown by repeated and careful tracings.

Dr. Shaffer said that extensive observation had taught him that with efficient mechanical treatment, the abscesses of Pott's disease almost uniformly pursue a benign course, and he believed that the time would come when those who now operate will see their error. He had seen in the practice of some of the best surgeons in this city, deaths occur after operating upon just such abscesses. When an abscess is very tense, and there are severe local or constitutional symptoms, all recognize the propriety of incision, but ordinarily, these abscesses are flaccid, and do not cause any such "damming up" and injurious pressure as had been described by Dr. Phelps.

Dr. Whitman could see no good reason for waiting until the abscesses appeared below Poupart's ligament. When first discovered, they should be aspirated, and if this fails, iodoform emulsion should be injected. Surely a method of treating the abscesses of Pott's disease which yielded in the hands of Bruns fifty successful cases out of fifty-two, and of Fraenkel, eighteen out of twenty, was one which deserved a fair trial before resorting to severer measures. If aspiration and the injection of iodoform emulsion proved unsuccessful, the method of evacuation recommended by Barker and Treves, with immediate closure of the wound, might be employed before resorting to open drainage.

Dr. Plimpton, in closing the discussion, said that the tube had been left in for free drainage, as it had been found that where it was removed shortly after operation, the exuberant granulations choked up the sinus, and gave rise to a great deal more trouble and discomfort than where the tube was retained. At the time of the operation, he had in mind the possibility of accident from having the tube in too close proximity to the femoral artery, and in this particular case there were dense cicatricial barriers between the tube and the artery. Small and not readily accessible abscesses should not be interfered with unless they cause some disturbance, but he would not hesitate, if circumstances seemed to demand it, to open them above Poupart's ligament. The existence of intra-abscess pressure and its effect upon the general health, was well demonstrated in one case in which he removed about half a pint of the contents of the abscess by aspiration, with the result of causing an immediate return of the child's appetite, and a prompt relief of his pain. He had seen the iodoform emulsion used in a number of instances without apparent benefit. In considering the percentage of abscesses which disappear spontaneously, it must be remembered that many of them are small abscesses, or are nothing but fluid in the joint, so that the statistics on this point were very defective.

Dr. L. W. Hubbard read a paper entitled "A Contribution to the Study of Non-deforming Club Foot."

Dr. Phelps objected to the name "non-deforming club foot," on the ground that all cases he had seen presented deformity.

Dr. Shaffer said that when he first called the attention of the profession to this subject, this name had suggested itself to him because all the conditions of club foot were present except the deformity, which was so slight that it had hitherto escaped observation.

Dr. V. P. Gibney said that the condition described some years ago under the name metatarsalgia might be confounded with non-deforming club foot. These patients usually complain of pain after sitting for some time, as in the theatre. He had treated a few cases of non-deforming club foot by division of the tendon and plantar fascia, over-correction, and retention in this position by plaster of Paris for a period of several weeks, and he had not been obliged to resort to extension subsequently. So far as he knew, these cases had not relapsed.

Dr. Shaffer said that in a series of twenty-two cases of metatarsalgia, he had relieved over one-half by the antero-posterior traction shoe alone. The inability to flex the ankle joint brought the maximum pressure at the point of irritation, and hence, by producing a certain amount of forcible flexion at the ankle joint, the pressure was brought upon other parts, thus removing the constant irritation which he thought was the chief etiological factor. He had permanently and completely relieved marked cases of non-deforming club foot within one week by three or four applications of his traction apparatus. In some cases, deformity can be reduced at one sitting, but the muscles re-contract slightly, necessitating a more prolonged treatment. He did not believe that tenotomy was necessary in any case of non-deforming club foot.

Dr. R. H. Sayre had found many cases of metatarsalgia to be dependent upon irritation of the pelvic nerves, and such cases had been relieved by galvanism with one pole over the sacrum, and the other over the ovarian region. In the treatment of non-deforming club foot, he sometimes employed stretching, and sometimes tenotomy, depending upon the nature of the case. If the tendo Achillis or plantar fascia gave a reflex spasm when stretched to its utmost, while joint pressure was applied, his experience had been that tenotomy was necessary. If no reflex spasm was produced, the contracted tissues could be stretched.

Dr. Ridlon asked if the author considered the woman exhibited by Dr. Whitman, to have a pure non-deforming club foot, and whether he would expect to fully relieve the disability and restore the full flexion by the use of a stretching apparatus.

Dr. Halsted Myers reported a case of non-deforming club foot in a man, 38 years of age, in which the etiology was unknown. The symptoms were unusual in that although the ankle flexion was only stopped at 95°, the principle complaint was that the knee could not be fully extended. The patient also felt that he could not fully extend his thigh without much more effort than on the other side, and also felt that his pelvis was tilted up posteriorly. The man knew nothing of anatomy, yet these symptoms were reasonable theoretically, for shortened gastrocnemii might cause knee flexion, and this, in turn, thigh flexion, and this again, tilting of the pelvis up posteriorly. The shortening of the gastrocnemii was the only deformity apparent, yet the subjective symptoms were so annoying that the patient himself proposed forcible extension and fixation in bed, for months even if necessary.

Dr. H. W. Berg said that he had seen many of the cases on which Dr. Shaffer's first paper was based, and not a little credit was due to him for having distinguished these cases from those of chronic rheumatism. Most of those described in the paper of the evening, had been so quickly relieved that he was inclined to think they were not congenital, for, after such a condition had lasted for many years, it did not seem reasonable that they should be relieved by one or two stretchings.

Dr. Hubbard, in closing the discussion, said that he had never seen a case of non-deforming club foot which he thought would consent to an operation for the relief of the difficulty, as the patients did not ordinarily consider it of much importance. Nor could he recall a single case which had not been materially relieved after one or two stretchings, except in those which were *rheumatic*.

In answer to Dr. Ridlon, he would say that he considered the case presented by Dr. Whitman, a typical one of non-deforming club foot of a rather pronounced type, but he had seen as bad, and even worse cases, relieved by persistent stretching. The treatment was prolonged in some instances by the re-contraction of the muscles, but just as india rubber yields after a certain number of stretchings, so these cases will be permanently relieved after the continued use of the traction shoe. In the case referred to in the paper, the condition had lasted for a long time, and the muscle was well developed, and the time of treatment was still further prolonged by the patient's intolerance of the stretching.

A NEW APPARATUS FOR OVERCOMING THE ABDUCTION OF THE THIGH IN HIP JOINT DISEASE.

Dr. Newton M. Shaffer exhibited a new apparatus which he had devised for the purpose of overcoming the abduction of the thigh in hip joint disease, and at the same time avoiding the infliction of any traumatism upon the joint. It consisted of a thoracic attachment to the ordinary long hip splint, with an arrangement of curved levers actuated by a key, by which motion is imparted to the limb in a direction downwards and inwards, instead of as in other instruments of this class, inwards and upwards. This is the chief feature, and it is on this account, that traumatism is avoided. It can be attached to any ordinary long traction splint, and like the thoracic part, it is to be used only as a temporary arrangement for reducing the deformity.

Dr. Phelps said that he was glad to see that Dr. Shaffer had come to recognize the fact that we cannot act upon the hip joint with any degree of precision without taking hold of the thorax; but he failed to see any necessity for such an apparatus in our armamentarium, as his lateral traction splint did the same thing, and no case of hip joint disease need recover with angular deformity. Since he had devised and made use of his lateral traction fixation splint, which acts on the same principle as the apparatus just exhibited, he had not seen a case in his practice of angular deformity. If such a thoracic splint be applied after the deformity has once been overcome, recovery must take place without angular deformity.

Dr. Shaffer explained that the apparatus he had just presented, was intended only as a temporary apparatus for overcoming persistent abduction of the thigh, and he considered it a very serious mistake to use the thoracic attachment in the ordinary treatment of hip joint disease, because it limited the motion of the spinal column, and this would necessarily increase the strain upon the diseased joint. It was for this reason, that he had discarded the thoracic addition to the hip splint many years ago. The idea of his new apparatus is to provide a temporary means of overcoming abduction, and it is only to be worn long enough to accomplish this purpose, and then it is so arranged that the abduction and thoracic portions can be readily removed, leaving the ordinary hip splint, which permitted a free movement the dorso-lumbar spine, and thus diminished the traumatis at the hip, which is best shown when a patient with hip joi disease and dorso-lumbar caries, attempts locomotion.

NECROLOGY.

A. M. Pollock, M. D., of Pittsburg, Pa.

Death has touched him with his dart, the honorable an skilful physician and surgeon, Dr. A. M. Pollock. He die June 20, 1892, after a long illness, full of years and experienc I first became acquainted with this honorable gentleman i 1866, since when he has assisted me in many difficult an complicated cases at all hours of the twenty-four. I alway felt that I had no ordinary prop to lean upon in trying an difficult cases. He did not practice his profession for glor but for the benefit of his patients. He was unassuming modest, quiet, cheerful and gentlemanly in the sick room and rather than claim the credit himself for what assistanc he might give or what light he might throw on a case, he woul give the attending physician full share of the honor tha might be derived from his counsel. He never be-littled th attending physician to his patient, or to his friends. He alway left the attending physician after a consultation with mor of the patient's and patient's friends' confidence than befor the consultation. He would not suggest a change in treat ment unless it was actually necessary for the benefit of th patient, and then it would be made in such a gradual man ner that it would be passed unnoticed. He had the "touc of a lady" and whilst he may not have had the other tw attributes of the surgeon "the heart of a lion and the eye o an eagle." yet he had other qualities which are far higher—good judgment, skill, caution and conscientiousness. He would not operate for the sake of operating. He would feel morally certain that the operation would benefit the patient before he would consent to perform the operation, and now that he has gone his loss will be deeply felt. His chair is vacant. We shall miss him socially and professionally. May God bless him. His works will follow him. J. M. B.

Dr. Henry F. Formad, of Philadelphia, who died recently, was an eminent physiologist and original investigator. He was born in Russia about forty-five years ago. While yet a lad, he was called upon to serve in the medical department of the Imperial army. He was suspected of political heresies, and he became an exile after having served a term of imprisonment. He went to Berlin and Heidelberg studying medicine and microscopy, especially; at the latter place he took his degree, with honors. He became for a time a *docent* in histology and microscopy, which subjects were then comparatively little developed or taught. With Dr. Wier Mitchell he made some original researches as to the poisons emitted by insects. With Dr. H. C. Wood, he did some work for the authorities at Washington, regarding the infective processes of diphtheria. The results were published about 1880. He became a member of the American Medical Association in 1889.

Dr. William Randall Birdsall, of New York, died on the 7th of June, aged forty years. He was a graduate of the University of Michigan and College of Physicians and Surgeons, New York, about sixteen years ago. His specialty was that of the nervous system and he held the physiciancy in the department of nervous diseases in the Manhattan Eye and Ear Hospital. He was a member of the Academy of Medicine and numerous other Societies.

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SATURDAY, JULY 2, 1892.

BY-LAW IV OF THE AMERICAN MEDICAL ASSOCIATION.

The Publication of Papers and Reports.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

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Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Board of Trustees shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

NEW CASES OF INDIGENOUS FILARIAL DISEASE.

In a recent number of *Public Health*, MR. AUSTIN WILLIAMS, of Liverpool, reports a case of filaria sanguinis hominis, occurring in that city. About one year ago, an adult male noticed that his early morning urination was followed by a few drops of blood mingled with, or suspended in a jelly-like mass. After a few negative examinations with the microscope had been made, the suspected filaria was discovered. This chyluria has continued until the time of report. Hæmaturia of a severe character has also occurred, the blood appearing most copiously in the morning. This attack subsided after a time, and then the patient's condition relapsed to his usual state of passing a drop or two of blood, with chylous urine, on rising in the morning. The man has never been out of England, nor very far away from Liverpool. MR. WILLIAMS knows of no other possible way in which his patient could have contracted the disease, except that he has been exposed to the emanations from the intestines of animals, some of them imported from southerly ports, which animals may have been infested with this parasite. A physician of DR. WILLIAMS' acquaintance, name not given, has informed him privately of a case of chyluria in the person of a man, whose duties brought him into contact with imported cattle.

In August of last year, DR. R. M. SLAUGHTER, of Theological Seminary, Virginia, found two apparently indigenous cases in his State. He has given a report of his cases, with an illustration, in the *Medical News* for December 5, 1891. While engaged in microscopic work, he was surprised to find in the urine of two patients unmistakeable evidence of the embryo form of filaria sanguinis. Indigenous cases have been reported from Charleston, S. C., to the number of twenty-two, by DR. DE SAUSSURE; also one other case by DR. MASTIN, of Mobile. Adding the two cases of DR. SLAUGHTER to those, there have been reported just twenty-five cases in the United States, believed to be indigenous.

DR. SLAUGHTER made a careful investigation at the Library of the Surgeon-General of the Army at Washington, but he was not able to increase the total beyond the twenty-five cases just referred to: it is true that other cases of filaria sanguinis have been reported, but they were not of indigenous origin. Those cases had been imported from tropical countries.

The cases reported by MR. WILLIAMS and DR. SLAUGHTER have enlarged the bounds of this variety of indigenous parasitism to and beyond the thirty-eighth parallel of latitude, north. They are probably the first recorded cases of their kind in their respective localities. The condition of the blood was reported as to none of these three cases. DR. SLAUGHTER had desired to examine the blood of his two cases, but had not been able to do so. Embryo filaria was found in the pus of an alveolar abscess in one of his cases that showed a tendency to the production of furuncles. The hæmato-chyluria of these cases appears to have been the maximum of pathological results; the lymphatic manifestations so frequently observed in chronic filarious infection, such as chylocele, lymph-scrotum, lymph-leg, lymphangitis, glandular tumors and abscesses, etc., etc., were absent.

All cases of chylous disease should be investigated microscopically. Many of them have been so examined in recent years with negative results. One such we recall as having occurred not long ago at the Philadelphia Polyclinic, in the practice of that admirable clinician, DR. SOLOMON SOLIS-COHEN. The patient was a colored lad, from the island of St. Thomas, having chyluria. Although repeated examinations of both urine and blood were made by the reporter and by the late Dr. Joseph Leidy and by Professors Tyson, Heilprin and Griffith, the suspected parasite was *not to be found*. In the case of the Charleston chylous series many negative examinations were made prior to 1886. Finally in that year, Dr. John Guiteras was the first to detect the embryo specimen in chylous urine and in blood. The embryo worm is somewhat elusive of microscopic research. The following description taken from Dr. Rudolph Matas' contribution in the *New Orleans Medical Journal*, January, 1891, shows why the helminth is most successfully sought in fresh fluids: "When first seen under the microscope the parasite presents itself as a transparent and almost structureless little worm, which moves with vigorous and graceful serpentine movements in the blood current, dashing along and ploughing its way rapidly through the mass of blood corpuscles. If the medium becomes dry, these organisms *become granular and assume a striated* appearance owing to the retraction of the enveloping membrane, or chorionic sac. If they are abandoned in an extravasated fluid, or in urine, or in ascitic liquid, they become invisible after a certain time."

The therapeutics of filarial disease are commonly aimed at the removal of the adult worm by some appropriate surgical procedure. No specific remedy antagonistic to the embryonic form that roams through the circulation has yet been found. Thymol, however, has been reported upon favorably from India by Surgeon-Major Lawrie. He has given to the *Lancet* reports of two cases of apparent cure of chyluria of filarious origin by one grain doses, every four hours, gradually increased to five grains. Dr. Solis-Cohen, in the case already referred to, made use of a placeboic remedy which to the mind of his patient exhibited the "startling virtue" of clearing up the milky urine, and by the end of a week making it "perfectly clear." Now this remedy chanced to belong to the aromatic vegetable group as well as thymol; it was aqua menthæ piperitæ, given in six drop doses thrice daily. Can it be possible that there was enough of remedial potency in that mint-water, superadded to the effects of this more northerly climate upon a lad —who had been nine years absent from the hot-bed of filarial infection—to stamp out the last particle of vitality in a moribund and expatriated parasite, and really clear away a last feeble barrier to the normal flow of the chylous circulation? Let the answer be what it may, there can be no harm in suggesting that some of the products of thyme and mint may be serviceable in chyluria and other chylous cases, whether their origin be shown to be filarial or not; the treatment to begin after having made a check-examination with the microscope of both blood and urine of the patient. It may be that the vegetable aromatics are the *appropriate antagonists against* certain forms of animal parasitic infection.

THE THIRD ANNUAL SESSION OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

One of the most important of the National Associations holding their annual meeting contemporary with that of the meeting of the American Medical Association is the above named body. Its third annual session, recently held at Detroit, was most successful. Among the list of new members we observe Harvard represented by Prof. Harrington, and Woman's Medical College of Pennsylvania by Prof. John B. Roberts. The membership now includes two-thirds of the regular schools of the United States, including nearly every well established reputable institution. The exception to membership is *notably from the schools of the Southern States*. The situation in the South is best explained in the statement of a representative of one of these schools in a communication withdrawing from membership in this body. He says unless certain other competing colleges *in my locality join*, we cannot remain a member, and consequently withdraw until such time as these colleges see fit to join us in promoting this desirable reform. We are of the opinion that the intelligence and pride of the South is such that the representatives of these colleges will not require repeated urging, but that they will indicate by their immediate action that they purpose keeping abreast of the recent reforms in medical education. We believe the near future will see this a very strong society, including in its membership all the reputable colleges of the country. There is no urgent reason why the representatives of colleges themselves should not meet together as occasion requires, and in a business-like manner correct their own abuses, as they may exist, and receive that benefit certain to come from mutual gathering of bodies of people pursuing like avocations, and whose thoughts pursue the same channels. Representative bodies of this character have become a social and business necessity. We have our National associations representing our different business, church and educational interests. The bodies representing the professions of dentistry, pharmacy, engineering, etc. If we mistake not, a successful *organization* of this character will render less necessary such urgent appeals for the regulation of medical practice and medical education by State legislation. The action of the American Medical Association in endorsing the "minimum of requirements" of the college association, and directing the Secretary, Dr. Atkinson, to so notify the different colleges, is suggestive of professional sentiment at the present time. The papers of Drs. N. S. Davis and Victor C. Vaughan were well worthy of their distinguished authors. The title of the first paper was "To What Extent Should Clinical Instruction be Afforded Students of Medicine in Regular Courses?" and of the latter, "To What Extent Should Laboratory Instruction be Afforded Students of Medicine in Regular Course?" The discussion upon the paper of DR. VAUGHAN was postponed for one year, and DR. RIGNELL H. FITZ, of Harvard, invited to open the discussion at that time. DR. VAUGHAN's paper outlined a very comprehensive course, well adapted to the new course to be enforced at the university he represents. Its practical enforcement by the colleges would render easy the solution of the question of higher medical education in the United States. DRS. N. S. DAVIS and PERRY H. MILLARD were reëlected President and Secretary.

As the mouthpiece of the great body of medical men in this country, THE JOURNAL welcomes the new organization, and bespeaks for them a bright and most useful future.

MISTLETOE AS AN OXYTOCIC.

In the *Medical News*, DR. H. P. HOWARD, of Virginia, reports his personal experience with mistletoe as a substitute for ergot. In one case of very protracted labor, where there was apparent cessation of uterine contraction, the drug was of signal benefit, after a variety of other measures had been resorted to without the least benefit. He used the fluid extract at irregular intervals, with the effect of terminating labor in about five hours. There were produced a typically normal uterine contraction, both as to strength and regularity. The third stage of the labor was ended by the same pain as that which followed the expulsion of the fœtus. The womb then contracted firmly, promptly, equably and with a minimum amount of hæmorrhage. In this case delivery was almost wholly uterine in action. The patient was a chronic sufferer from cardiac asthma from mitral lesions and hypertrophy, also peritoneal inflammatory complications; so that any sustained abdominal efforts were out of the question, or if they had been relied upon, the labor must have terminated in death. In this view of the case, the author accords to the drug the largest share of credit for the unexpectedly favorable outcome of the parturition. The author gives some literary information regarding the history of mistletoe as an oxytocic. DR. W. H. LONG, of the United States Marine Hospital Service, published in 1878, some favorable results from a ten years' trial of the drug. He claimed that he had found it superior to ergot in labor. He advocated the use of the drug in post-partum hæmorrhage, menorrhagia and hæmoptysis. DR. LONG's paper appeared in *New Preparations*, and in the *Louisville Medical News*, for the same year, 1878. In DR. LONG's opinion the drug was capable of producing intermittent uterine action, as distinguished from the tonic contractions caused by some other oxytocic medicines.

About forty years ago, DR E. B. TURNIPSEED called attention to the fact that mistletoe had a certain popular reputation as an aborti-facient. His paper was published in the *Charleston Medical Review*, in one of its earlier volumes. The general therapeutical rating of mistletoe is that it is inert, unmanageable and obsolete, whereas neither of these designations may be the truth.

ARTIFICIAL URETHRA IN PROSTATIC OBSTRUCTION.

An article in *Medical Press and Circular*, May 11, gives to DR. HUNTER MCGUIRE, the newly elected President of the American Medical Association, the credit of priority, over one or two French surgeons, in planning and performing his operation for the relief of chronic prostatic disease. The writer states the dates and places of publication of first papers on the subject sufficiently to prove DR. MCGUIRE's precedence. He says that he notices the matter because he thinks "that it is very desirable that the praise and credit of devising and successfully completing a new and much required operation should be *justly* awarded; and we feel that our contemporary *L'Union Médicale* and our professional brethren in France would not unwittingly deprive one of the most distinguished surgeons of the English-speaking peoples, DR. HUNTER MCGUIRE, of his well-won honor."

It was at the convention in 1888 of the American Surgical Association, that the first two cases of DR. MCGUIRE were reported. His paper was published in volume six of the Transactions of that Society, under the caption of "The Formation of an Artificial Urethra in Prostatic Obstruction," and a later contribution, entitled "A Report of Twenty-one Cases of Supra-pubic Cystotomy, with Remarks," appeared in the eighth volume of the same Transactions.

Two French surgeons have done the same or a similar operation for cystitis and prostatic hypertrophy. The former of these was probably DR. F. VERCHERE, who in the early part of 1889 made a supra-pubic fistula under the guise of an artificial urethra. Following him DR. PONCET has operated not less than thirty-five times upon cases of enlarged prostate that were not remediable by less serious surgical intervention. The writer in *L'Union Médicale* describes the PONCET procedure as "an anterior supra-pubic, artificial urethra which will be of very great service in chronic prostatic disease." The advantages of the operation were not admitted by all the surgeons who discussed DR. MCGUIRE's paper in 1888, although PROFESSOR GROSS congratulated the author that he had been enabled to bring out the new operation based upon the physiology of urination and mechanism of the bladder. Among the other surgeons who offered their views on the subject at that time were Sir William MacCormac, Reginald Harrison, Annandale, Arthur Durham, Hingston of Montreal and Hayes Agnew. The greater number of these were wedded to the older methods, while some of them regarded the supra-pubic operation as dangerous out of all proportion to the benefits to be obtained. Dr. Agnew took the position that a skilled operator may do the supra-pubic section with perfect safety, while an inexperienced person might unexpectedly find himself doing an intra-peritoneal operation. Dr. McGuire remarked that in his operations he had not met with the peritoneum.

EDITORIAL NOTES.

Prevention of Blindness.—A committee was appointed by the Medical and Chirurgical Faculty of Maryland in April, 1891, to devise means for lessening the amount of blindness from curable diseases. This committee prepared a circular which was sent to the midwifes of Baltimore explaining the dangers of ophthalmia neonatorum, and giving directions for cleaning the eyes of the newly born. The necessity for prompt medical interference at the first sign of the disease was also insisted upon.

In addition, in the waiting rooms of the various dispensaries of the city they placed placards, reading as follows: "Watch a baby's eyes carefully for a week after birth. If they look red, or run matter, take it at once to a doctor. The child may become blind if not treated properly." Such work can hardly fail to prove of much value, and should be imitated elsewhere.

A Fee Arbitrated and Promptly Paid.—The readers of The Journal will be glad to learn that Dr. F. E. Waxham has received two thousand dollars for his services in a case of intubation for diphtheritic laryngitis. The parties disputed the bill for six months and at last put it in arbitration. The full charge was allowed, and promptly paid by the happy father.

The College of Physicians of Philadelphia.—The College has been fortunate in receiving lately gifts of two portraits. Dr. H. C. Wood, for the profession of Philadelphia, gave a fine picture of Dr. Alfred Stillé. Dr. Mitchell, President, presented another portrait, that of Dr. Oliver Wendell Holmes, which was accepted by Dr. J. M. Da Costa, Vice-President. Dr. Holmes was prevented from being present, but he sent a reply in verse which contained numerous references to the convention of 1847 of the American Medical Association, held in Philadelphia, which was at that period the medical Athens of America. The poem of Dr. Holmes was read by Dr. Mitchell, who explained some of the more recondite allusions of the poem. Dr. Mitchell also contributed a poem of his own to accompany his admirable gift. The portrait of Dr. Holmes is the work of Mrs. Sarah Whitman, and is thought by many to be the most satisfactory counterpart of the poet-doctor ever made; he is represented life-size, half-length, and is garbed in the black robe of the Philadelphia College.

The papers have announced that the College will receive a bequest of $1,000 under the will of Dr. D. Hayes Agnew.

Medical Bequests of the Late Dr. Agnew.—Dr. Agnew has left an estate appraised at a quarter million. To the University of Pennsylvania he has given all his right and title in his great surgical text-book, also numerous specimens and drawings appropriate to pathological teaching. After the death of his widow the University Hospital will fall heir to $50,000. The Maternity and Kensington Hospitals will then receive $1,000 each. An equal amount will go to the College of Physicians.

Surgical Terminology.—At the Surgical Congress held at Paris, in April last, Dr. Ferrier treated of hepatic surgery, and gave specimens of the enriched vocabulary of that rapidly growing department. Among the terms mentioned were hepaticostomy, hepatostomy, cholecystostomy, choledocholithotripsy, cholecystenterostomy, cholecystolithotripsy and some others; nearly all of them derived from the Greek language and expressing some newly proposed operative modification.

ABSTRACTS.

Methylene-Blue in Malarial Fever.—W. S. Thayer (*Bull. of Johns Hopkins Hosp.*, May, 1892). In consideration of the fact that methylene-blue has the power of staining the malarial plasmodia in the cells of fresh blood as well as in dried blood, Guttmann and Ehrlich originally suggested its use in malarial fever. They observed two cases. The first was one of tertian ague to whom one dose of 0.5 G. (7½ grs.) of methylene-blue was given No malarial organisms were found in the blood after the third day. The second case was one of quotidian ague and under the use of the remedy, the plasmodia disappeared from the blood after six days. Thayer has observed seven cases of malaria treated with methylene-blue in Prof. Osler's wards.

In the first case, one of tertian ague, the patient was given 0.1 G. methylene-blue in capsules five times a day. On the next day the temperature rose to 105° but there was no chill. After this there were no further malarial symptoms, but the organisms did not disappear from the blood until the third day. The remedy produced burning with micturition and vesical tenesmus. The second case was one of chronic remittent fever with hyaline bodies and pigmented crescents in the blood. The temperature fell to nearly normal in five days, and there was marked diminution in the number of organisms. During the next month irregular, slight febrile attacks occurred, and with eventually an increase in the number of organisms in the blood. It seems from the report that the patient received the methylene-blue regularly for about four weeks, also toward the last of this period, Fowler's solution. Finally quinine was given in four grain doses three times a day, with return of the temperature to normal. The quinine was continued for eleven days and at the time of his discharge, the blood showed an occasional hyaline body, and pigmented crescent. His general condition improved rapidly under the quinine. The remaining cases illustrate more fully the features of the first two. The cases were all carefully observed, and the following conclusions which Dr. Thayer offers, seem fully justified by his report:

1. Methylene-blue has a definite action against malarial fever, accomplishing its end by destroying the specific

organism; but it is materially less efficacious than quinine, failing to accomplish its purpose in many cases where quinine acts satisfactorily.

2. The action appears to be rapid, the chills disappearing [illegible] the temperature, in the remittent cases, falling to normal during the first four or five days; but later, however, if a sufficient number of organisms have resisted the drug, they appear to develop again directly under its influence, causing a return of the symptoms.

3. Methylene-blue seems to have no advantages over quinine which would warrant its further use.

Giant Growth of the Colon.—H. F. Formad (*Univ. Med. Mag.*, June, 1892). Dr. Formad recently exhibited a very unique specimen before the College of Physicians, Phila. The specimen was an enormously developed colon. The patient from whom the specimen was taken was a man 29 years of age who had been found dead in a water closet, and thus became the subject of coronial investigation.

His history as obtained from his mother, shows that up to the age of eighteen months he was a normal infant with the exception of a rather large abdomen, some irregularity of the bowels and attacks of constipation. The abdomen continuously increased in size, and the constipation became more marked. At sixteen he would go as long as a month at a time without a movement of the bowels. At twenty years of age he was exhibited in a dime museum as the "Wind bag" or "Balloon Man." Lately he had abdominal pain, tympanites, and shortness of breath. At the autopsy the colon was found to be 8 feet, 4 inches long, and its circumferential measurement at various parts as follows: Cæcum 10 inches; ascending colon, 15 inches; transverse colon gradually increasing from 15 to 30 inches; descending colon, 25 inches; sigmoid flexure 25 to 27 inches. The rectum was of normal size. The meso-colon was abnormally large and thick. The colon contained about two and a half pailfuls of fecas, which weighed forty pounds. The coats of the colon appeared to be normal. The other viscera were normal but displaced to accomodate the colon. There was no evidence of an obstruction and Dr. Formad regards the case, not as one of ordinary dilation from retention of feces, but an actual overgrowth of colon.

Phenacetine in Urinary Troubles.—Traill Green (*Univ. Med. Mag*, June, 1892). The writer calls attention to the relief which phenacetine has given in his hands, in cases of frequent micturition in old people. He calls attention to the well known fact, that old people are often troubled with strongly acid urine, which calls for frequent micturition. At times this so interferes with rest at night as to seriously interfere with their general health. He has recently been in the habit of prescribing in such cases, 10 grs. of phenacetine at bedtime, with generally complete relief of the symptoms. He does not recommend its use in enlargement of the prostate.

Piperazine in Gout.—Schmidt (*Jour. de Méd. de Paris*, May 22, 1892). Schmidt advises the employment of this remedy, which holds an important place in the treatment of gout, in the following ways:

1. In a dose of 1 G. (15½ grs.) daily dissolved in simple water, or in Seltzer water.

2. In .5 per cent solution, piperazine causes no irritation of mucous membranes, so that a solution of this strength is suitable for lavage of the bladder, and gradual dissolution of uric acid calculi there.

3. Owing to its ready solubility in water, it may be used in 10% solution for direct injection into the uric acid tophi themselves.

4. Piperazine, ½ gram; Alcohol, 20 gram; Water, 80 gram. This solution may be used on compresses as a direct local application to gouty deposits, and will favorably influence the action of piperazine administered by the mouth.

DOMESTIC CORRESPONDENCE.

To the Editor of the Journal of the American Medical Association:

In giving the following statement, as the result of a careful investigation of the sanitary condition of the Hotels Ponce de Leon, Alcazar, and Cordova in St. Augustine, Fla., and of such accounts of the cases of fever which occurred in guests of these hotels during the spring of 1892 as it has thus far been possible to obtain, I am satisfied that no one of these cases of fever was caused by the water supply, or by the drainage of the buildings, or by anything connected with them or their surroundings. The water supply has been examined chemically and bacteriologically, the plumbing and house drainage of each hotel have been carefully scrutinized, the sources of milk supply, of ice, and of fresh vegetables for the use of the guests of these hotels have been investigated, and no causes of disease have been found in any of them. There have been no cases of typhoid fever among the residents in St. Augustine during the past year, and the general sanitary condition of the town is excellent.

Between December 15, 1891, and April 25, 1892, about 25 cases of typhoid fever are reported as having occurred in about 25,000 persons who visited St. Augustine. Fourteen of these cases occurred among visitors while they were in the town—and eleven are said to have occurred from two to three weeks after the patients had left the town. In addition to the above, four cases are reported in hotel servants and one in a nurse. Seven of the cases in visitors while in the town were in the Hotels Ponce de Leon, Alcazar, and Cordova, and six of the cases reported in persons who had been gone from two to three weeks were also in guests of these three hotels. In all, therefore, out of about 1,600 guests of these hotels, thirteen are reported as having been affected with typhoid. The investigation into the details of these cases is not yet completed, and I can only say now, that it is probable that two or three of them were not typhoid fever at all, that two of them were ill on the day of their arrival, which illness became well marked typhoid five days later, and therefore, was not contracted at St. Augustine, and that of all the cases at the above mentioned hotels, there were among the guests but three which it would seem must have been contracted during their stay in St. Augustine. The four servants affected with typhoid probably had the specific cause introduced into their bodies through contact with a fever case, or cases, or with soiled linen from such case.

Every educated physician will understand from the above figures, the extreme improbability that so few cases, scattered over a period of two months, and giving a ratio of less than one to a thousand people exposed, could have been due to anything in the structure of the buildings, the general water supply, or the food, milk or ice—and the detailed investigation of all these things makes it practically certain that no case of typhoid was due to any of them.

Whether the investigation, now in progress, into the history of the reported cases will indicate the source of the disease, is of course, doubtful, and probably the cases had no common source, but were each contracted at a different time and in a different place—but knowing, as I do, the great interest in these Southern winter health resorts felt by a large number of Northern invalids, it has seemed best to make this preliminary statement in order to assure them that they can make their plans for going to St. Augustine next winter with perfect confidence that—while absolute security can be had nowhere—so long as they are there they will probably be less liable to be exposed to the contagion of typhoid fever than they will be if they remain at home.

I. S. BILLINGS, M.D., Surgeon U. S. A.

BOARD OF HEALTH OF ST. JOHNS COUNTY.

ST. AUGUSTINE, FLA., June 10, 1892.

We, the Board of Health, of St. Johns County, Florida, do hereby certify that, prior to the month of April A. D. 1892, there were no deaths reported to this Board resulting from fever of any kind, nor does this Board have any knowledge of the existence of any case of fever in the City of St. Augustine, or St. Johns County prior to the period above mentioned; that during the month of April A. D. 1892, the following deaths from fever were reported to this Board.

1. Florence Hawley Glover Clark, white, female, age 37 years, residence Newton, Conn., died April 3, 1892, cause of death typho-malarial fever, reported by F. Fremont Smith, M.D., attending physician.
2. Elizabeth M. Park, white, female, age 35 years, residence Rye, New York, died April 5, 1892, cause of death typho-malarial fever reported by F. Fremont Smith, M.D., attending physician.
3. Joseph N. Knight, white, male, age 34 years, residence Highwood, New Jersey, died April 14, 1892, cause of death, typhoid fever, reported by F. Fremont Smith, M.D., attending physician.
4. Irene L. Davis, white, female, age 26 years, residence Philadelphia, Penn., died April 17, 1892, cause of death, typhoid fever, reported by F. Fremont Smith, M.D., attending physician.

That all of said deaths occurred in the City of St. Augustine; and that since the 17th day of April, 1892, there has been no report to this Board of death from fever of any kind.

We further certify that the rules of this Board require attending physicians to report deaths to this Board within 24 hours after the same occur; and that all deaths are so reported by the physicians of this county in whose practice a death may occur; that at the present time we have no knowledge of the existence of any case of fever in the City of St. Augustine, or the County of St. Johns, but the certificate of practicing physicians in this city and county, is, in our opinion, the best evidence as to whether or not fever of any kind exists here at the present time.

We further certify that the sanitary condition and healthfulness of this city and county are very good and have never been better.

[SEAL.] WM. F. SHINE, M.D.,
Pres't St. Johns County Board of Health.
(Signed) T. E. B. KERNAN, A. J. CORBETT, SEC'Y.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

In THE JOURNAL of June 25, is published a report of the proceedings of the meeting of June 8. In that report there is nothing said of my substitute or amendment to Dr. Willis P. King's motion in regard to the committee of five from the American Medical Association, and one of five from the New York State Medical Society. My amendment added five from the New York State Medical Association. It was carried. The report reads: After further discussion Dr. Gihon offered the following amendment to Dr. King's resolution, which was accepted by the latter. Then follows the resolution, in which the names of Drs. Potter and Vander Veer are mentioned. Their names were not mentioned in the original motion. It was so decided next day.

Sincerely Yours, J. G. TRUAX.

New York, June 27, 1892.

FOREIGN CORRESPONDENCE.

Public Vaccination in Berlin.

There are to be seen in Berlin at the present time multitudes of children bearing their school-books under one arm, while the other (always the left), has pinned conspicuously to the sleeve of the outer garment the Geneva Red-cross. On inquiry of one of the urchins, he immediately divested his arm of its covering and exposed to view six typical pustules of vaccination, and explained for my further edification that the Red-cross meant *nicht Drucken*—not to press rather a quaint idea.

Pursuing the subject farther, I have been able to obtain such information which I am led to believe places vaccination as to its methods, etc., on a plane rather different from that as at present practiced in America. On invitation of a colleague to whom I expressed the wish, I was enabled to see him vaccinate upwards of 200 children in a session lasting scarcely an hour; of the method employed I shall speak hereafter.

The gathering at a specified time of some fifty mothers with their babes, besides 150 other children whose average age is 12, for vaccination, is the finesse of a system which probably only such a Government as this can carry out. The authorities knowing of all births, a postal card is sent to the parent of a child born the previous year to bring the infant on such a day for vaccination, under penalty of a fine; besides, the law reads, all children approximating the age of 12 must be revaccinated under the same penalty. This is a *compulsion,* and it is this that makes the system here such a perfect one. The peculiarity of the law makes a child born December 31, 1891, undergo vaccination in 1892, while if its birth occurred a day later it would not be vaccinated till 1893, provided in all cases it be fit; *i. e.*, not suffering from disease, when if that be the case, a record is made of the fact, and the child is not bothered till the following year.

Thus in its first year the child is vaccinated, and again at 12; then, as far as the female portion of the population is concerned, the matter ends. As regards the male, he is revaccinated when he joins the military, and then only for sanitary precautions taken in all such large bodies. While this latter point may have some weight, still the theory of susceptibility differs much from ours, exemption being considered fully attained when the subject has been, as above described, vaccinated twice. It need scarcely be mentioned that where small-pox appears in a family the entire house is vaccinated. The entire house in Berlin, by the way, consists of from fifteen to thirty families, and therefore quarantining is impossible.

As regards compulsion with us at home, while it is thoroughly practiced in the schools, there are still quite a number of children who are not included, and who have escaped the vigilance of the district vaccination physician. We have compulsion at quarantine which has reached perfection, but there are some children born in America who up to a late date could pass peaceably enough through life without the well-known scars. Probably Cook County, Illinois, owing to its Compulsory Education Law, for which we ought to be thankful, is one of a very few places where vaccination is complete and thorough. To illustrate which I mention a case of *primary vaccination* in a child of 10 who, born by the aid of a midwife (whose highest ambition was probably to collect her fee), grew in poverty and ignorance till he attained that age when he could help earn something for the maintenance of the family. The Compulsory Educational Act coming into effect, the boy was surprised, pleasantly we may hope, by having his face washed, some neat apparel given him and sent to school; afterwards to the physician to fill out the vaccination certificate. In this case nothing was discovered on either arm but the accumulation of dirt of years, which on removal could not unearth a single scar. Fortunately, these cases are now exceedingly rare, and it is questionable whether in a little while they will not disappear entirely.

As to the methods. I saw the vaccination physician operate on some 200 cases in a series of 2,000, and his *modus operandi* is worthy a description.

The animal lymph which is supplied by the Government in liquid form, and is sent in minute glass tubes containing a sufficient quantity for fifty or one hundred vaccinations, each tube bearing the number of the calf from which the lymph is taken; a report being made by the physician as to its qualities by its effects on the patients. To be noted in this connection is the fact that if the vaccination does not take the first year, it is compulsory on the part of the parent to bring the infant a second year, and if no result is then attained again the third year, which proves final whether the vaccination is successful or otherwise.

The vaccination knife of Kerstein was used. It consists of a blade which is as thin as a spatula, sharpened on both edges, and whose length is 1 inch with a width of ¼ inch, which does not taper to a point, but is ⅛ inch wide at its tip; it is with this tip that all the incisions are made. The skin of the arm is made tense and, in case of a babe, four incisions are made on each arm after the tip has been slightly dipped into the lymph, once for each arm. With the infants antisepsis is practiced, wetting the blade in water after each vaccination and cleaning with antiseptic cotton. In the grown children antiseptic precautions are not used, and six incisions are made, but only on one arm. Of paramount importance in all the cases is the art of incising without drawing blood, in that event the lymph is liable to be washed away, and I must confess that I failed to see a single drop of blood from any of the incisions, which numbered over a thousand.

I was afforded an opportunity of noting the result of this method of vaccination by observing the same 200 subjects that I had seen vaccinated, who came eight days later to report and to receive their certificate. They all showed the typical pustules, and scarce in any case, of the infants especially, was there any failure of a single incision to produce its characteristic sore. As regards this the law is that in case of infants, if but one pustule results, it must be immediately revaccinated, the physician using the contents of the pustule for that purpose; while in the grown children, if but one incision "takes," that is sufficient.

One can conclude from this that the vast majority of physicians here, as it is now with us, pass their lives without seeing a single case of small-pox, and know only of the disease by its description in the books.

Jacob Rosenthal, M.D.

Berlin, June 7, 1892.

SELECTIONS.

A Worthy Sanitary Feat Quietly Accomplished.—It is alleged for General Rusk that he has greatly improved the treatment of cattle exported to Europe for food purposes. The mortality among them at sea, resulting from cruelty, want of water, etc., was formerly stated at 16 per cent., while at the present time it is 1 per cent. The value of these exportations is not far from $25,000,000 annually. If this statement is only partly true, General Rusk has accomplished a great sanitary reform, for he has been the means of indirectly purifying the flesh-food supply of thousands of European consumers.—*New York Med. Journal.*

Effects of an Overdose of Codeine.—An overdose of codeine is not a common occurrence, and therefore Dr. Mettenheimer, who has met with such a case, has reported it. An elderly lady consulted him for a slight catarrhal nonfebrile affection which, however, gave rise to a troublesome, spasmodic form of cough. For this he prescribed 0.03 gram (about half a grain) of phosphate of codeine, in the form of a pill, to be taken every three hours. The patient, however, swallowed four of these pills, or about a grain and a half of the codeine salt, at once. Shortly afterwards she vomited twice and suffered from abdominal pain. There was, too, suppression of urine and she felt very ill, being sleepy but unable to go to sleep. The next day she was still drowsy and had no appetite but there was no return of the sickness. She was then seen by Dr. Mettenheimer, who found the pupils hard and contracted, the pulse hard and quick, and the respiration accelerated. The cough had entirely disappeared. The contracted state of the pupils, the loss of appetite, and the abdominal pain persisted for several days. No urine was passed until thirty-six hours after the pills were taken. On the third day the drowsiness had passed away. The cough did not return for a week and when it did it was comparatively slight. This case seems to show that codeine in large doses has a very similar effect to opium and that it may prove a most efficient remedy for some kinds of cough. As the tongue remained clean it would appear that the vomiting was due to cerebral, rather than to gastric, irritation. —*The Lancet.*

The Pancreas and Diabetes.—Professor Seegen, one of the chief authorities upon diabetes in its physiological as well as its clinical aspects, recently read a paper before the Medical Society of Vienna, in reference more particularly to the recent researches upon extirpation of the pancreas and diabetes, and having regard to Lépine's explanation that the pancreas produces a glycolytic ferment, the lack of which causes an accumulation of sugar in the blood. Professor Seegen says that, granting that the blood of a diabetic patient has less glycolytic action than that of a healthy subject, it is assuming a great deal to hold that this proves the presence in health of a special glycolytic ferment manufactured by the pancreas. By careful experiments he finds that the normal sugar disappears most rapidly from freshly drawn blood when the latter is maintained at a high temperature (39° C.), whilst a current of air is being passed through it. That this is not due to the action of living protoplasm he shows by the addition of chloroform (to kill the protoplasm), which makes hardly any difference in the glycolytic action. Moreover, since the glycolysis goes on more actively after the blood has been drawn for some time than at first, Professor Seegen infers that the ferment is produced by some change in the blood outside the body rather than by the pancreas. He does not discuss the question of the diminution of this ferment in the blood of diabetics (men or animals), but refers to Minkowski, who found the sugar rapidly diminish in blood from a diabetic dog. Professor Seegen suggests that diabetic blood may contain something antagonistic to glycolysis, so that even if Lépine's experiments are correct, they do not necessarily point to a diminution of the ferment in that disease. He holds, therefore, that the explanation of "pancreatic diabetes" has still to be found. Minkowski showed that if a portion of the pancreas (in animals from which it had been extirpated) were transplanted beneath the peritoneum, the diabetic condition is averted, only to appear when the transplanted organ is removed by a further operation. This, as Professor Seegen points out, is comparable with the effect of experiments in thyroid grafting by Eiselsberg, who found that tetany did not occur until the transplanted organ had been excised by a second operation. Morbid anatomy has, however, abundantly shown that in cases of diabetes the pancreas may be quite normal, so that, in fine, upon this question Professor Seegen agrees —and, indeed, has always maintained—that in cases of diabetes there is diminished glycolytic action in the body; but he denies that Lépine has proved this to be due to disease of the pancreas causing a diminished production of a hypothetical ferment.—*London Lancet.*

Disease of the Brain following Simple Operations about the Nose. By Wagner (*Münchener med. Wochenschrift*, 1891, No. 51).—To three cases of operation on the nose (middle turbinate bones) followed by fatal meningitis collected in medical literature, the author adds one which came under his notice. In the case of a man, æt. twenty, suffering from chronic hypertrophic rhinitis, the galvano-cautery was applied to the anterior part of the lower border of the left middle turbinate bone. Three days after there was a smart venous hæmorrhage from the posterior nares, and headache. The bleeding was eventually stopped by plugging. The temperature then went up to 40° C., the pains continued, Cheyne-Stokes' respiration supervened, with stiffness of and pain in the neck, followed by pains in the joints. Death occurred, with meningitic symptoms, thirteen days after operation. A *post mortem* examination was not made.

Direct infection of the brain (sinuses and meninges) can be explained by the anatomy of the parts. Communication of the veins of the middle and superior turbinate bones with the longitudinal sinus, and of their lymphatics with the subdural and sub-arachnoid spaces. How to prevent such complications is difficult, owing to the impossibility of thoroughly disinfecting the nares. Operations on the middle turbinate bones appear to be specially liable to lead to the [illegible]ve results.—(Cramer, C[illegible]

Treatment of Enteric Fever with Chloroform.—Paul Werner (*St. Petersburger Med. Woch.*). The author, after comparing the disease as seen at the present day with the type of twenty years ago, and relating his failure to get the good results he had expected from iodoform, states that he selected chloroform from its well-known antiseptic properties and the recommendation of Behving and Salkososki, and gave it in 130 cases of enteric fever in thirteen months; and as the patients took only its aqueous solution (0.75 per cent.) in doses of one ounce every hour it is hardly surprising that he observed no disagreeable after effects. The meteorism and diarrhœa are said to have speedily disappeared and steady convalescence followed. It is not definitely stated if all recovered nor what was the age of the patients. Amongst children the so-called typhoid fever —febricula—should be recovered from without any medicine whatever, but, as the little ones always like chloroform water, there is no harm in giving it.

Hereditary Idiopathic Athetosis.—This complaint is a rare variety of what was usually called paralysis agitans. M. Raymond, in a discourse on the subject, thus characterizes and distinguishes it. The tremor is observable in the forearm when the patient is recumbent, sometimes also in the upper arm as high as the shoulder. On sitting up the oscillations become more marked, and amount to about five in a second. There is no individual trembling of the fingers as in the athetosis of alcoholism, when each finger possesses a tremor of its own. The number of the oscillations somewhat diminish when the patient takes an erect position after rest. There is a slight tremor of the lower extremities when the patient is in bed if he is made to hold them raised from the bed. There are some fibrillar contractions of the biceps. Walking is well performed; the reflexes are good; there is no loss of common sensation. Carrying a heavy weight, and so producing fatigue, increases the tremor. Alcoholic excess diminishes the trembling, thus again marking off the complaint from the paralysis agitans of alcoholic origin. No abnormal movement of the eyelids, lips or muscles of the face; the tongue is sometimes affected. Heat, emotions, and atmospheric changes (? barometrical) increase the complaint. The hereditary character of the disease is well marked. The disease begins early in life, sometimes about the eighth year, and after attaining a certain intensity does not increase. It is distinguished from senile paralysis agitans by the absence of head movement, and from the hysterical form of the disease by the absence of sensory-moto disturbances.—*Provincial Med. Journal.*

General Purulent Peritonitis with Perforation.—A complete cure in a case of this complaint, generally regarde as certainly fatal, was achieved by Dr. Routier, who opene the abdomen, allowing all the pus to escape and washing the cavity with an antiseptic solution, which was freely used. The wounds were not closed, but free drainage was secured by means of strips of iodoform gauze. Two months after the operation the wounds were found to be completely healed, and the patient resumed his occupation—that of a coal-heaver—and has suffered no inconvenience since.—*Provincial Med. Journal.*

On the Pathology of Dysuria Senilis. By Casper (*Berliner Klin. Wochensch.*, 1892, No. 5).—A few years ago Launois, a pupil of Guyon, put forward the theory that hypertrophy of the prostate was not a local process, but was part and parcel of senile sclerosis of the whole of the urinary apparatus intimately connected with arterio-sclerotic degeneration of the arterial system generally.

[illegible]cal importance of this theory induced Casper to investigate [illegible] He examined the kidneys, bladder, prostate and their vessels, [illegible] the larger arteries, of twenty-eight bodies of men over fift years of age. In the first twenty-four the prostate w enlarged and the aorta atheromatous (arterio-sclerosed in eight cases only was there arterio-sclerosis of the vesse of the kidneys and of the vesical arteries in the walls of th bladder; in nine cases this condition was present in th small arteries of the bladder and in the prostatic and per prostatic vessels. In two cases only this condition was foun in the kidneys, bladder, and prostate simultaneously. I the remaining twenty-two cases it affected either bladde and prostate, kidneys and prostate, or kidneys and bladde The four other cases presented endo- and peri-arteritic processes in the vessels of the urinary apparatus, but the prostate was not enlarged.

Casper cannot, therefore, accept Launois' theory. H admits that hypertrophy of the prostate is frequentl accompanied by changes in the vessels, but he holds it is condition independent of arterio-sclerosis.—(Müller, *Centralblatt fur Chir.*, No. 14, 1892.)

Pharyngeal Tuberculosis.—At a meeting, February 1 1892, of the French Society of Dermatology and Syphilography, M. Jullien presented a woman who was the subjec of pharyngeal tuberculosis. The disease had been acquired by cohabitation. Such a rare mode of infection is worth mention. The woman had had for several months relations with a tuberculous individual. Upon the pharynx were seen distinct ulcers, in which M. Jullien discovered the bacillus of Koch.—*Le Progrès Médical*, February 13, 1892 *Medical Bulletin.*

Obstinate Hiccough.—Dr. H. M. Shallenberger, of Rochester, Pa., recommends fluid extract of physostigma in doses of 4 to 8 drops, pushed to the point of causing toxic symptoms.—*Medical Record.*

MISCELLANY.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from June 18, 1892, to June 24, 1892.

Major John S. Billings, Surgeon U. S. A., granted leave of absence for one month and fourteen days, with permission to go beyond sea.

Capt. William B. Banister, Asst. Surgeon U. S. A., is granted leave of absence for one month, to take effect on or about July 1, 1892.

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ORIGINAL ARTICLES.

ADDRESS ON THE OBJECTS OF THE AMERICAN MEDICAL TEMPERANCE ASSOCIATION,

AND ON THE PHYSIOLOGICAL AND THERAPEUTIC DIFFERENCES BETWEEN THE CARBO-HYDRATES CONSTITUTING PROXIMATE ELEMENTS OF LIVING VEGETABLE AND ANIMAL BODIES, AND THOSE RESULTING FROM BACTERIOLOGICAL OR RETROGRADE ACTION.

Delivered at the Annual Meeting in Detroit, June 9th, 1892.

BY N. S. DAVIS, M.D., LL.D.,
PRESIDENT OF THE ASSOCIATION AND DEAN OF THE NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, CHICAGO, ILL.

Ladies and Gentlemen:—We are assembled to note the first anniversary of this Association, which was organized in Washington, D. C., May, 1891. The objects had in view by those who participated in its organization as declared on that occasion were, "to advance the practice of Total Abstinence in and through the medical profession, and to promote investigation as to the action of alcohol in health and disease; and to form a bond of union among medical abstainers all over our country." That those three objects are of sufficient importance to challenge the attention of every well informed and unbiased member of the profession, must be admitted by all. Especially is this true, if we consider the fact that more than $800,000,000 are annually paid for alcoholic drinks, fermented and distilled, by the people of this *country; over $700,000,000 by the people of Great* Britain; and nearly in the same ratio by all the nations occupying the Continent of Europe; and all this without returning so much as a single cent to the consumers who pay the money, or a pound of bread for their families. If we also consider the fact that all our highest judicial authorities and social economists attribute much more than half of all the pauperism and crime, in the same countries, *to the use of those drinks*; while the highest authorities in our own profession freely admit that a large percentage of the sickness and mortality is traceable to the same source, we will be compelled to admit that there is no other topic more imperiously demanding the candid, persistent and thorough investigation by every practitioner of the healing art, than that which relates to the real influence of alcohol directly upon the living human system and indirectly upon the collateral interests of the race.

To make such investigations accurately and reliable, the investigator must himself be free from the deceptive and perverting influence of the alcohol upon his own brain and blood. In the language of our excellent Code of Ethics: "It is incumbent upon the faculty to be temperate in all things, for the practice of physic *requires the unremitting exercise of a clear and vigorous understanding; and in emergencies,* for which no professional man should be unprepared, a steady hand, an acute eye and an unclouded head may be essential to the well being, and even *life of a fellow creature." Hence, our by-laws* require the practice of total abstinence from alcoholic drinks by the members of this Association, although they place no restrictions upon the conscientious use of alcohol in the treatment of disease. To determine more accurately the origin, nature, physiological effects, and therapeutic uses of alcohol, and to diffuse a knowledge of the same, both in and out of the profession, is the paramount object of our organization. As an Association we have nothing to do with the political parties and questions of the day whether of prohibition, high license, low license, protection, free trade or reciprocity. Our work is one of strict scientific inquiry and investigation. Professor Schmoller, the economist of Germany, says: "Among our working people the conditions of domestic life, of education, of prosperity, of progress, or of degradation, are all dependent on the proportion of income which flows down the father's throat. The whole condition of our lower and middle classes, one may even without exaggeration, say the future of the nation, depends on this question." As the same may be said with equal truth concerning our own people, it certainly becomes us as the professional guardians of the public health, to ascertain more certainly the nature and effects of those drinks that "flow down the father's throat," and which carry with them the income, on which depends the domestic happiness, the education, the prosperity and much of the health of the whole community. It is hardly necessary to say that the one essential ingredient in all the "drinks" here spoken of, whether fermented or distilled, is alcohol. It is not found as a proximate element in living organized bodies, either vegetable or animal, but is exclusively the product of bacteriological action on glucose or saccharine matter, constituting the process known as vinous fermentation. In other words the alcohol is an effete toxic product resulting from the action of the microörganism known as the torula cerevisiæ, of Turpin, on sugar or glucose, and is composed of C_2H_6O. It is therefore chemically a pure carbo-hydrate, and early in the progress of analytic and organic chemistry, it was unfortunately classed by Baron Liebig with those carbo-hydrates resulting from vegetable growth or nutrition, starch, sugar, gum and cellulose, as supporters of combustion or respiratory food when taken into the human system. Such classification was not founded on the results of any scientific investigations *showing that the* actual effects of alcohol, starch, sugar, etc., when taken into the living system, were similar, but solely on the fact that they were all composed of the same ultimate elements, carbon, hydrogen and oxygen, in such proportion as to admit of further oxidation outside of the living body.

And as such oxidation or combustion was accompanied by the evolution of heat, it was assumed, without experiment or proof, that all these carbohydrates were oxidated in the living system, and were active supporters of respiration and animal heat, while the various organized animal tissues were developed and nourished from the nitrogenous proximate elements of food. The simplicity of such a classification of foods and animal tissues, aided by the high authority of Liebig, caused it to be universally accepted and thoroughly incorporated into both medical and general literature, where, in the public mind at least, it still remains; and is a fair illustration of the danger or fallacy of assuming that similarity of chemical composition is proof of similarity of action when taken either as drink, food or medicine.

From a somewhat extended investigation of the subject, I think it may be stated as a general law, that all the orders of animal life are dependent for their development, growth and nutrition, upon materials resulting from either vegetable or animal growth. Certainly none of the higher orders of animal life assimilate and appropriate for the growth or repair of their structures and the support of their physiological processes, inorganic materials not previously combined under the formative or vitalizing influence of vegetable or animal life. It may be further stated as an equally general law, that the products of retrograde metabolism or tissue metamorphosis as presented in the excretions and eliminations from living bodies, both vegetable and animal, are not only not capable of being used as food, but are either inert or positively toxic if retained or reintroduced into the living body. Hence we have a clear and most important distinction between such carbohydrates as starch, sugar, gum, cellulose and dextrin, resulting from vegetable and animal nutrition, and the alcohols, which result solely from retrograde metamorphosis or bacteriological excretion, usually termed fermentation. And instead of acting alike as respiratory or indirect food, as has been claimed so long, all the strictly scientific investigations of the last half century have proved their action upon the structures and functions of the living body to be as diverse as their origin. Thus the carbo-hydrates of the first class named, starch, sugar, gum, etc., when taken into the healthy stomach, readily undergo such digestive and assimilative, or molecular changes that their identity is not recognizable in either the blood or tissues of the healthy animal, and the products derived from them produce no unnatural excitement or disturbance in any of the functions and processes of the living body. Though taken in proper quantities daily from year to year, they create no craving or morbid appetite for more; and when the quantity taken at one time is excessive, such excess is rejected ith the ordinary fæcal matter of the intestines.

But the alcohols constituting the second class un- o no such digestive or assimilative changes in mach or digestive apparatus. If the ordinary alcohol is taken into the living stomach un- d absolutely pure, it acts directly upon the h which it comes in contact as a destruc- ve poison, and speedily destroys the life etables and animals when brought in n them. When largely diluted with water, e various fermented and distilled liquors, nto the stomach, it is rapidly imbibed, without change, and carried directly into the blood, and with it, into every tissue and organ of the body, as has been demonstrated by the application of reliable tests many hundred times. More or less of it also soon reappears in the excretory secretions and eliminations of the lungs, skin and kidneys, like other foreign or non-assimilable materials. While retained in the blood and in contact with the tissues, the alcohol modifies in a marked degree the sensibility of the nervous structures, and also the molecular or metabolic changes concerned in nutrition, disintegration and sensation. If taken daily for a considerable length of time, it invariably creates a morbid appetite or craving for steadily increasing quantities, and sooner or later establishes degenerative changes in nearly all the organized structures of the body. It is obvious, therefore, that there is actually no similarity or analogy, either histological or physiological, between the carbo-hydrates of vegetable and animal growth and those derived from bacteriological or putrefactive fermentation. And the time has fully come when the purely theoretical, and most mischievous error of grouping them together as respiratory and force generating food, should be corrected in all our literature and eradicated from the public mind. Half or three-quarters of a century since, when alcohol was placed at the head of the list of respiratory foods by the chemico-physiologists of that day, it was claimed that when taken into the living body it readily combined with oxygen, and was resolved into carbon dioxide and water, with the evolution of heat; and hence it came into almost universal use as a supposed stimulant and promotor of animal heat. Step by step, however, investigations carefully devised and faithfully executed, have not only demonstrated this supposition to be erroneous, but they have equally demonstrated the real action of alcohol in the living human system to be that of an active anæsthetic, directly diminishing cerebral and nerve sensibility and muscular action; a retarder of the internal respiration, by which oxygen is carried from the pulmonary to the systemic capillaries; and a sedative or retarder of the molecular or metabolic changes in the tissues and secreting structures of the body. These several propositions have been so fully sustained by the direct experimental investigations of Prout, Böcker, myself, Richardson, Anstie, Hammond, Harley, Sidney Ringer, Martin, H. C. Wood, Lauder Brunton, Dubois, Reichert and many others, that it would be superfluous to quote them in detail. There are, however, still many, both in and out of the profession, who claim that the alcohol is an anæsthetic only when given in large doses; while if given in smaller doses and repeated at suitable intervals, they claim it acts as a stimulant and tonic, especially on the cardiac nerves. The incorrectness of this claim is completely demonstrated by the investigations of Drs. Ringer and Sainsbury, Professors Martin and H. C. Wood.

The experiments of Sidney Ringer and Harrington Sainsbury were instituted for the purpose of determining the relative strength of different alcohols as indicated by their influence on the action of the heart of the frog. In closing their report on the subject they say: "By their direct action on the cardiac tissues these drugs (alcohols) are clearly *paralyzant*, and that this appears to be the case from the outset, no stage of increased force of contraction preceding."

The experiments of Professor Martin, of Johns

Hopkins University, were performed on the dog, and he states the results obtained as follows: "Blood containing ⅛ per cent. by volume of absolute alcohol has no immediate action on the isolated heart. Blood containing ¼ per cent. by volume, that is, 2½ parts per 1,000 of absolute alcohol, almost invariably remarkably diminishes, within a minute, the work done by the heart; blood containing ½ per cent. always diminishes it, and may even bring the amount pumped out by the left ventricle to so small a quantity, that it is not sufficient to supply the coronary arteries."

Professor H. C. Wood, of the University of Pennsylvania, also executed his experiments on the dog, and in his address to the International Medical Congress at Berlin, 1890, states his results as follows: "An 80 per cent. fluid (alcohol) was used, diluted with water. The amount injected into the jugular vein varied in the different experiments from 5 to 20 cubic centimetres, and in no case have I been able to detect any increase in the size of the pulse, or in the arterial pressure, produced by alcohol, when the heart was failing during advanced chloroform anæsthesia. On the other hand, on several occasions the larger amounts of alcohol apparently greatly increased the rapidity of the fall of the arterial pressure, and aided materially in extinguishing the pulse rate." That alcohol exerted, not only a general anæsthetic effect upon the nervous system, but also a special or direct paralyzing influence on the cardiac and vaso-motor nerves, strictly parallel with that produced by chloroform and ether, was clearly shown by R. Dubois in 1883. And the editor of the department of experimental therapeutics in the fifth volume of the Annual of Universal Medical Sciences, 1892, in referring to the review of the work done by nearly all those who have engaged in experimental investigations regarding the effects of alcohol on the living system, by E. MacDowell Cosgrove, truly says: "Contrary to what has been and is supposed, it is found from all these researches, that small doses of alcohol, from the first, produce a narcotic rather than a stimulating effect." And he adds that all the observers except one, had "also found that alcohol in small doses diminished the amount of carbon dioxide exhaled." It is thus shown, by the direct experimental researches of the most eminent men in different countries, aided by all the instruments of precision invented in this period of active scientific progress, that alcohol in the living system actually diminishes the sensibility and action of nerve structures in direct proportion to the quantity used. An ordinary regard for scientific accuracy, therefore, demands that it should be classed as an anæsthetic or narcotic, and in no sense as a stimulant or tonic. In studying further the mode by which alcohol produces its effects while in the living human system, it is necessary to appreciate the full import of the following propositions:

1. All nerve sensibility and force, and all natural molecular or metabolic changes, nutritive, secretory, and disintegrating, taking place in the living tissues, are absolutely dependent on the presence and movement of blood containing its natural proportion of oxygen.

2. The oxygen needed in the blood is received from the pulmonary air cells by the hemaglobin and serum of the blood and in them conveyed to the systemic capillaries, where it comes in contact with, and exerts its influence on, every cell and structure of the body.

3. Alcohol at ordinary temperatures of the air, or even of that of the living human body, manifests but a very feeble affinity for oxygen, but does manifest a very strong affinity for water, albumen and hemaglobin, acting upon them readily at all ordinary temperatures.

If, therefore, alcohol sufficiently diluted to permit its circulation in the blood, should be introduced, either by the stomach or any other method, instead of uniting with the oxygen, it presents its superior affinity for the hemaglobin and serum albumin, and thereby directly interferes with their reception of more oxygen from the pulmonary air cells. It is thus that the presence of the alcohol hinders the hemaglobin from being converted into oxy-hemaglobin in the pulmonary capillaries, and in the same ratio diminishes the amount of oxygen conveyed to the systemic capillaries; and in the same ratio, also, the nerve sensibility and metabolic changes diminish. This affords a full explanation of the facts now admitted by all who have carefully studied the subject, namely, that the presence of the alcohol retards both nutritive and disintegrative changes, diminishes excretory products and temperature, and lessens nerve sensibility and force.

An explanation of these admitted facts has been hitherto, and still is, sought for on the supposition that the alcohol simply unites with oxygen of the blood and thereby prevents or diminishes the action of the latter on the tissue elements of the body, and yet generates heat and some kind of force. The fatal defect in this old combustion or oxidation theory is, that no investigator has been able to find the legitimate products of such oxidation. So far as is known the oxidation of alcohol resolves it into either aldehyde, carbon dioxide and water, or acetic acid, and evolution of heat. Consequently, if alcohol underwent oxidation in the system some increase of one or all of these products should have been uniformly found, either in the blood, the exhaled air, or in the other excretions. But instead, the most accurate and numerous investigations show less carbon dioxide in the exhaled air, less temperature of the body, and neither acetic acid nor aldehyde in the blood.

And yet the puzzled investigators turn and say that, inasmuch as the alcohol disappears in the system and cannot be all regained from the secretions and eliminations in a limited time, it *must* have been oxidized and converted into some kind of force. But what force? Certainly not nerve force, mental force, muscular force, heat force, or metabolic force; for all of these are directly diminished by its presence. The only force found operative in the case, is the superior affinity of the alcohol for the hemaglobin, albumin, and water of the blood; and its toxic power to so modify their molecular condition and properties as to diminish their efficiency in receiving and conveying the oxygen from the pulmonary to the systemic capillaries, and thereby impairing all the vital processes in which the presence of oxygen is required.

This view also affords a rational explanation of the numerous pathological changes everywhere recognized as resulting from the habitual use of alcoholic drinks, even in the most moderate quantities. These changes were well exposed in the celebrated discussion on chronic alcoholism by the Pathological Society of London, only two years since, and are easily found on the pages of our medical literature.

It enables us also to see clearly the philosophy or *rationale* of those illusions and delusions that have been imposed upon the human mind by the use of alcohol in both health and disease through all the generations of the past. Thus, a moderate dose in health by its anæsthetic effect on the nerve cells of the brain lessens the individual's consciousness of cold or heat, of weariness or despondency or weakness, and he is deluded with the idea that it had warmed and cheered and strengthened him, when it had done neither; but instead, had simply diminished the acuteness of his own perceptions while the evils continued in full force. So in the progress of disease, its use generally has the same anæsthetic effect, causing the patient to complain less, rest more, and often say he feels better, but it neither removes the exciting cause, nor corrects the morbid processes constituting the disease, nor increases the activity of the metabolic changes of either nutrition or elimination. Nor is this all. For in the same proportion as the alcohol diminishes the internal distribution of oxygen and thereby acts as a so-called conservator of tissue, it still more actively interferes with the katabolic processes by which the natural excretions are maintained and foreign disturbing elements are eliminated, and consequently it prolongs the morbid processes, favors molecular degenerations, and increases the ratio of mortality. Clinical facts and cases could be cited in abundance, illustrating and sustaining the correctness of the foregoing views, did my time permit. I will, however, at present only add for your consideration the following questions:

1. If the physiological standard of health requires a natural degree of sensibility of the cerebral hemispheres and the internal distribution of oxygen in natural quantity, and the presence of alcohol diminishes both in direct ratio to the quantity taken, how is it possible for persons in health to use it without injury?

2. If the alcohol, while in the living system, does thus diminish the sensibility of the nerve structures and retard the internal distribution of oxygen, is it not a true anæsthetic and organic sedative, and, therefore, adapted to the treatment of only a very limited number of morbid conditions presented in the progress of disease?

3. Is it not true that all the fermented and distilled alcoholic liquors are genuine toxic products of bacteriological cultures, and ought we not to uniformly designate them as such, instead of continuing to delude ourselves, our patients, and the public generally by calling them tonics, stimulants or indirect food?

NEW AXIS-TRACTION OBSTETRIC FORCEPS.

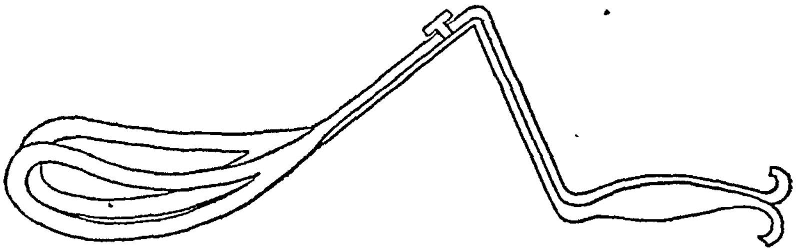
Read before the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June 7, 1892.

BY WILLIAM B. DEWEES, A.M., M.D., UNIV. OF PA.,
OF SALINA, KAN.
Vice-President of the Pan-American Medical Congress for Kansas, Ex-President of the Golden Belt Medical Society of Kansas, Member Western Association of Obstetricians and Gynecologists, Fellow American Academy of Medicine, etc., etc.

As progressive obstetricians, following Nature's guidance at all times, we are ever directed by the truism, that "real wisdom is always simple."

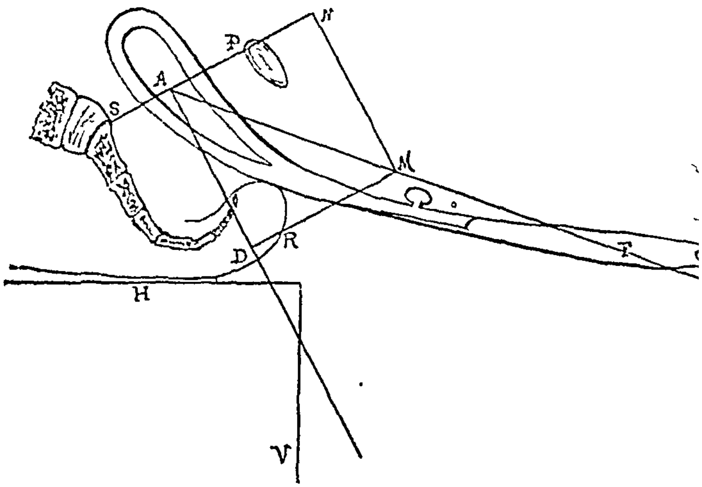
With regard to the use of the obstetric forceps, it may id truthfully that the principle of axis-tra conceded by all thoughtful and observing practitioners to be correct. That the day is already dawning when the authorities will hold that no woman should be delivered by instrumental aid, except by axis-traction. But the various ideas advanced for its production are, however, conflicting, and some are even fallacious.

Being convinced, after timely observation and experience, that the desideratum to fulfil the *rationale* of the axis-traction principle was still wanting, I endeavored to supply the same. I succeeded in having Geo. Tiemann & Co., of New York City, make a forceps after my own idealization, which I now have the pleasure of presenting before this august body. The only important new feature is the construction of the perineal curve, and providing the same in the handles which serve for *axis-traction*. It is an aseptic, simple, efficient and economic instrument.



DIMENSIONS.—Length of forceps, 16 inches. Length from lock to tips of blades, 9 inches. Length from lock to perineal curve, 1 inch. Length of perineal curve, 5 inches. Length of axis-traction handles, 5 inches. Average width of blades, 1¾ inches. Greatest width between blades when closed, 2½ inches. Width between tips of blades when closed, ¾ inch. Weight, 20 ounces.

To demonstrate more clearly that the action of this forceps is in strict accord with the acknowledged axis-traction principle, I beg leave to first call your attention afresh to the classical demonstration of the axis-traction principle, as given by Tarnier.

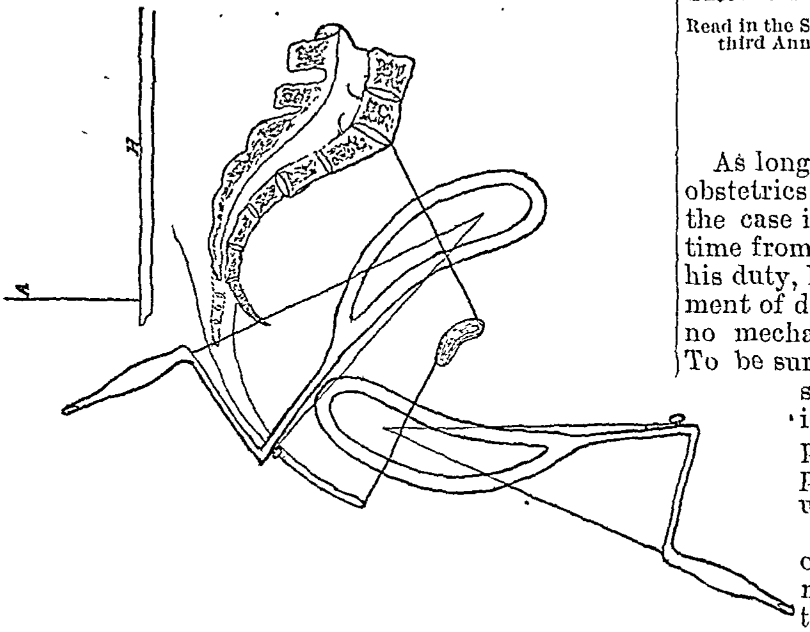


TO ILLUSTRATE AXIS-TRACTION. (Tarnier after Barnes.)
H. V.—Horizontal and Vertical lines of a table. S.—Sacrum. P.—Pubes.

"The figure represents an application of the forceps at the brim. The line A B indicates the axis of the opening which the head must traverse, and therefore the direction the tractions must take to be correct. But when the operator pulls upon the handles of the forceps, the tractions he makes are converted into a force represented by the line A F. Supposing that these tractions equal 40 kilograms, and they be represented by the distance A M, and we construct upon this line A M the parallelogram of forces A D M N, we find that the traction A M is decomposed into two forces—the one, A D, which tends to lower the head in the direction of the axis of the brim; the other, A N, representing a vicious pressure which falls upon the pubes. Now, the lines A M, A D, A N present different lengths, which are expressed by the numbers 10, 30 and 26, in round numbers. Therefore, in pulling upon the handles of the classical forceps with a force of 40 kilograms, one tends to lower the head in the direction A D with a force of 30 kilograms only, whilst involuntarily the pubes is subjected to a vicious pressure of 26 kilograms. It must be understood that in this calculation I have taken into account simply the force and the pressures arising out of the act of the operator, neglecting those which proceed from the natural action of the mother's tissues."

Barnes, in commenting on this, voices the logical conclusion when he says: "He thus demonstrates that it is impossible to pull in the axis of the upper strait or brim, and to avoid vicious pressure by grasping the handles of the ordinary forceps. Those who object to Tarnier's forceps insist that, by the well-known manœuvre of pulling on the handles with one hand, and at the same time pushing back upon the shanks with the other, the direction of the traction is changed to that of the axis. We are convinced from long practice and many close observations, that the correction thus obtained is inconsiderable, and that Tarnier's demonstration is true. Tarnier next applies a like method of demonstration to the action of the ordinary forceps in the cavity and outlet, showing that in these cases also there is waste of force and vicious pressure."

With your minds thus refreshed, let me now call your attention to the following diagram, which will, I trust, demonstrate to you with sufficient clearness as to convince you that this forceps fulfils, in the simplest manner, the desideratum of an ideal axis-traction instrument in strict conformity with the *rationale* of the axis-traction principle.



To Illustrate Axis-Traction with the new Axis-Traction Forceps.
H. V.—Horizontal and Vertical lines of a table.

With the patient placed in the left lateral (English) position, obliquely across the bed, with the nates brought to its verge, and by the use of this forceps, it is claimed:

1. That axis-traction is made perfect, easy and simple.

2. That axis-traction at the superior strait is perfect, and so continues during the entire passage of the fœtal head, following the curve of Carus from the brim to the outlet, with ease and safety.

3. That the axis of the blades of this forceps lies constantly parallel with the axis of the parturient canal as the head descends; thus enabling the accoucheur to fulfil a most important aim in forceps operations, namely: to deliver with a minimum amount of force.

4. That the operator is enabled to seize the head more advantageously at the brim, and the facility with which the head can be aided to descent in the axis of the superior straits, as well as to follow the axis of the pelvis, would seem scarcely possible to one accustomed only to the ordinary forceps.

5. That it is easy of application, and in its triple character—having a moderate head curve, a moderate pelvic curve, and a decided perineal curve (the latter is provided in the handles which serve for traction)—it has all the advantages of axis-traction with plenty of power and perfect control, and with the simplicity of the ordinary forceps.

6. That it does away with the complicated, cumbersome and expensive attachments of the Tarnier and other models. The indicator is constantly in the sentient hands of the operator, who thus at every moment knows, through his *conscience musculaire*, the direction of traction as well as the resistance. Thus preserving intelligent observation of the progress of labor and regulation of the forces employed, which alone can be done by the use of the hands in executing traction and extraction.

THE MANAGEMENT OF LINGERING LABOR.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, June, 1892.

BY GEO. C. MOSHER, M.D.,
OF KANSAS CITY, MO.

As long as the physician continues the practice of obstetrics as at present the usual custom, allowing the case in hand to consume the greater part of his time from the hour it is first seen until he finishes his duty, having delivered the patient, the management of delayed or lingering labor where there exists no mechanical obstruction must prove a bugbear. To be sure there are physicians who do not, as they say, "waste their time" in this tedious fashion, but in point of fact the number of practitioners of my acquaintance whose practice is to leave the parturient woman until actually needed is very small indeed. However anxious he may be to answer other imperative calls, however tired he may be and however so much he may feel that his services are not absolutely required for the time being, still the careful accoucheur does not feel at ease unless within call of his patient.

This being the case it is only natural that many expedients have been resorted to, in order to hasten the desired result. When we shall have reached the Utopian age where we can trust our patient to the care of a conscientious, obedient, intelligent and discreet nurse upon whose judgment we can rely to conduct the case in the interim between the first examination and such time as the physician's skill is ultimately necessary, then this feature of the case will not need be discussed. But this will require an education vastly superior to that now possessed by the average nurse, and also of the patient, and more especially of her friends and over solicitous neighbors, as well.

In the mean time the plain uncomplicated case of lingering labor drags itself wearily along, and what means are best for its management in the interests of the mother, the child and the doctor, the three parties especially concerned? Elaborate treatises have been written upon the more complicated obstetric operations, but this topic which more frequently than abnormal presentation or pelvic deformity or any other surgical feature of obstetric art, is se, an [illegible]nted for consideration, is, as a rule, but touch litera [illegible]htly ilosoph.

upon in passing from normal labor to that requiring mechanical interference. In no situation is the young obstetrician so uncomfortable as to have assured an anxious family that everything is all right and promised a speedy delivery, then have the pains die out and leave him for hours in a state of uncertainty.

Lingering labor is generally understood to signify a labor where the head presenting normally, the case occupies more than twenty-four hours between commencement and termination, estimating from the beginning of true uterine action. In regard to the effect on the strength of the patient, however, it is not usual that any considerable effort has been made or great exhaustion suffered previous to the rupture of the membranes. Hence in calculating the danger of injury to the soft parts it is sufficient to take into account the time after the escape of the liquor amnii, as the volume of the fluid acting as a cushion renders it impossible for any alarming pressure to be experienced.

Cases related where women have been in labor for ten days or two weeks are not worthy of consideration, being as a rule but exaggeration of the false pains suffered previous to any ordinary labor. In the case of long delayed labor it is ordinarily found that the patient has been debilitated by some previous illness, or if a multipara, the mother of a large family, the uterus fails to act with its accustomed vigor, being in this instance a reversal of the physiological law that muscular energy and tone are increased by exercise. Here the rhythmic character of the contractions is lost and feeble irregular pains are met with, where a roomy pelvis and good dilatation are found and every indication apparent that the powers of nature alone are wanting.

If we remember that in normal labor there is a distinct period of rest between the pains which permits the nervous system to recover itself after the contraction, it can be readily seen that if the pains are constant, without interval of relaxation, the tone of the muscular fibres must be finally exhausted and rigid os likely result as is so often seen in primiparæ where delivery is thus impeded.

From the earliest times efforts have been made to hasten delivery and some of the means are still extant which have become classical in their antiquity. Borax, the virtues of which we frequently hear through midwives and nurses, has had its advocates since the days of the ancients. Cinnamon, fox glove and other similar means, the interest in which at the present day is merely of an historical character, are in the same category as borax. The Asiatics had a favorite plan of treatment, that of tying a piece of tiger's skin over the left thigh of the parturient woman to promote uterine action. Lewis and Clark in their voyage up the Missouri mention the happy result of a dose of twenty grains of powdered rattlesnake tail in the case of an Indian squaw who was a servant in their party and whose labor was unduly prolonged. This same remedy was highly esteemed among African tribes. There is more method in the practice of Mexican Indians who have a tripod prepared under direction of the midwife who is to officiate, according to Engellmann, and from the top of this apparatus a rope dangles; this the patient grasps with her hands and the attendants take turns of encircling her body with their arms and pressing downward until she becomes worn out, then the rope is tied under the arms and the same squeezing process kept up until the patient is delivered or dies, the doctor never lets up until something is accomplished.

Among the Thomsonians, a school of physician which flourished in the early part of the present century, in our own country, the act of sneezing was invoked to hasten abdominal contractions and some amusing stories have been told of their success and the discomfiture of regular physicians when their practice came in conflict. This plan was called "quilling" and consisted in filling a goose quill with snuff, inserting the quill into the patient's nostril and blowing; often with a sneeze or two the babe was born.

At the present time it is the rule to learn the cause of the delay, to carefully exclude all cases of deformed pelvis, of unusual disparity between the fœtel head and the maternal parts and to look carefully to the rectum and bladder being emptied, before calling the case one of delay, simply, then an effort is made to treat it on physiological principles.

Among the remedies proposed to increase weak pains, and to induce pains where they are failing, warm teas and various drinks are most commonly resorted to among nurses and certainly these can do no harm where they are well retained and perhaps, by brightening up the patient may do good by encouraging her to renewed effort where her courage is failing. At any rate it satisfies her friends that something is being done to relieve her and hasten her delivery. Unless there is great prostration and dangerous weakness, I do not consider stimulants indicated, still a popular reputation that is enjoyed by a cup of warm toddy renders it of such frequent use that it may be allowed occasionally where there is no contra indication. However, the benefit derived is questionable unless the condition of the patient, aside from her labor pains seems to require stimulation.

To the use of ergot previous to the expulsion of the placenta, I am thoroughly opposed. In several cases where its employment was observed the death of the fœtus followed, and after the fœtus has been delivered and ergot used to bring down the placenta, hour glass contractions have been set up, and added to the delay, rather than helping the matter. Where Créde's method is accurately followed other means are seldom required in delivering the placenta.

To show how much the practice of physicians is to run to fashions, I may quote Mitchell who in 1828 wrote that, "In twenty years the use of ergot becoming thoroughly introduced the forceps would be known only in name and save in rare cases where Cæsarean section was formerly recommended there would be no need for interference in midwifery."

To be sure there are good practitioners who as a regular plan follow the administration of ergot in all cases, freely, and seemingly to me, recklessly, but its dangers and disadvantages of producing clonic contraction, compression of the cord, occasionally rupture of the uterus, etc., are so grave that its use has not seemed justified.

Dr. Beatty in the *Dublin Quarterly Journal of Medical Sciences*, August, 1850, advocated the combination of chloroform and ergot to mitigate the evils of their separate employment, citing numerous cases to prove his position. Quinine as an oxytoxic has been highly praised by Fordyce Barker and in doses of 15 grains of the bisulphate has apparently been of benefit in some cases in which I have used it. Hot water by the douche thrown against the unyielding cervix is a valuable aid. The application of hot water cloths, corn meal or bran poultices and similar external stimulants are to be commended, and excitation by slapping the abdomen with a wet towel will occasionally be followed by a good pain. The plan recommended by Zweifel of pressure upon the breech through the abdominal wall, using the left hand and attempting with the right hand, also externally, to aid the head in the direction of the pelvic canal is often of surprising help, aiding the head in rotation and fixation here as in other obstetric operations. Intelligent changing of the patient's posture is often followed by pronounced advance of the fœtal progress.

My rule has been to use chloral in lingering cases where it is not contra-indicated ordinarily, by rectal injection. In some cases its use has so quieted the nerves that a period of repose followed which gave the patient renewed zeal and the happy effect of a speedy termination of the labor. Sometimes an hypodermic injection of morphine is indicated combined with a small dose of atropia, where the nervous system is racked with violent pains which as they say " do not bear right," where a rigid os is found and a history of several hours fruitless suffering. This is most often successful in primiparæ where the pains begin robust and regular but finally fade and become irregular and inefficient.

The use of chloroform is advisable later on in the labor when the head presses firmly on the soft parts and the danger is that the perineum may suffer from the sudden accession of energy liable to come up as the final effort is being made. Earlier it is apt to cause the pains to die away for the time being and in a number of instances that are recalled the use of forceps was demanded because of this condition being induced because the persistent entreaties of the patient for chloroform were complied with. When all other means have been exhausted and the *caput succedaneum* can be distinctly felt, filling up the orifice of the vulva, the parts becoming hot and perhaps swollen; the patient feverish, pulse quickened and the general condition indicates that her force is spent, the final resort is the forceps.

I am well aware that many practitioners do not wait for these conditions to arise but put on the forceps early in the labor, but I want to make a plea for conservative action in this event. Give nature a chance before interfering. The more experience gained the less and less frequently do I find forceps necessary. Many a time mother nature has come to reassert herself when it seemed that instrumental delivery was inevitable. I recall a case some years ago where I had spent the night at a case of lingering labor and at five o'clock in the morning I told the patient that she must be delivered with instruments. I went across the street to ask my friend Dr. Porter for his forceps and found he had left them at his office. Returning to the house to send a messenger for my own case, I was most agreeably surprised to find good labor pains had set in, and before the forceps arrived the case was terminated without mechanical aid. The moral effect on the patient's mind had evidently been sufficient to assist her. This result has so often happened that it has become a habit to speak of instruments to that class of patients that one always thinks, now if she only would try once more she might get through. There are authorities who say " Put on the forceps in all cases where the membranes being ruptured the labor is not terminated in two hours," but there can be *no iron clad* rule regarding these cases any more than in case of firm membranes to say when we should rupture the sac. Each case being a law unto itself, excepting the general rule that no patient should be allowed to go on to complete exhaustion before energetic means are adopted for her relief.

The interests of the child are as a rule identical with those of the mother and the means proposed to secure her safety happily preserve the offspring as well. In advocating conservatism in using forceps it is only conservatism, not timidity, that is asked. Many lives are saved by intelligent use of forceps where formerly the same class of cases proved fatal to the child and perilous to the mother. The well known case of Princess Charlotte, of England, whose historic and unhappy labor was allowed by her distinguished attendants to drag along from simple inertia of the uterus two days after she should have been delivered offers a striking illustration of the want of such interference. She could have been, beyond question, saved by prompt forceps delivery and this would perhaps have changed an entire dynasty in Great Britain.

In a paper read at the Birmingham meeting of the British Medical Association, 1890, Dr. W. S. Playfair, the distinguished London obstetrician, pointed out some of the means which he considered best adapted to certain phases of labor, and I was much interested in the discussion which was participated in by many of the celebrated men of Britain, and was especially impressed with the thought that the lights of the obstetric world are as much at variance upon those points as would be shown by a comparison of the views of our own confreres.

Dr. T. More Madden, of Dublin, claiming to control the largest obstetric clinic in Great Britain, said his invariable rule was to give ergot in every case of lingering labor, in doses of three to four drachms of watery extract and to fortify this with a hypodermic injection of ergotine. Dr. Murdoch Cameron, of Edinburgh, related how he came to regard opium as a sheet anchor in these cases. He had left with a patient two vials, one containing laudanum, the other fluid extract of ergot and the nurse had given the laudanum at regular intervals instead of the ergot as directed. This, by quieting the nervous system brought on good labor and a case that he had expected to continue for a long time was brought to a close in three hours. Since then it was his plan to carry a bottle of two grain opium pills in his pocket and upon being called to a case of labor, he gave his pills at two hours intervals with the assurance that the case would be soon over or he could go home and get an all night's rest as far as that particular patient was concerned. Others advocated strychnine by hypodermic injection, Barnes' uterine dilators, gelseminum, electricity and a host of novelties in the way of therapeutic aids to delivery.

It is with a good deal of diffidence that I venture to bring this subject before the Section at this time when papers are being presented teeming with erudition and modern methods of procedure. No new theory has been advanced and no especial hobby championed, the greatest good hoped to be accomplished by a general *resumé* of the field is to draw out the opinions of these gentlemen present who may be interested in obstetrics or who may be familiar with its practice.

Dr. Shelton, of Maryland, in discussing the paper of Dr. Mosher, considered that the failure of the woman to bear down in cases of retarded labor is often the cause of the delay, and that this failure is occasioned by the sensitiveness of the parts. To relieve this he applies cocaine and boracic acid locally, or gives chloral and bromides internally.

Dr. C. R. Reed, Middleport, Ohio, said in interfering in delayed labor, much depended on the cause of the delay. He now very rarely waits two or three hours after the os is dilated. He uses the forceps in primipara in three cases out of four, and has not observed that the perineum is ruptured any oftener when the forceps are used than otherwise. I know I am not borne out by the authorities. I care nothing for that. I know that many cases might have been delivered without the aid of the forceps, but I have never regretted the use of the instruments.

Dr. Sell, New York, related a case of non-rotation of the head in the Vienna Hospital,

Dr. Don, Lewiston, Mich., related two cases where the ammiotic fluid remained to a large extent, and assisted rotation. If the uterus seizes the head tightly and you attempt to rotate the head in the pelvis you may fracture the neck.

Dr. E. G. Zinke related the method of Parry in anointing the hand with oil and pushing the head far up; in many cases the head is then delivered by the action of the uterus on the head in its new position.

Dr. John M. Duff. Pittsburg, distinguished between delayed labor and tardy labor. He agreed with Dr. Davis in recommending the pelvimeter. This would make our young men safer practitioners.

Dr. W. H. Hoy, Battle Creek, Mich., related a case which he had delivered within the last twenty-four hours.

Dr. Mosher, in closing the discussion, said cocaine had been used by him in a hundred cases and he could not see that it did any good. The man who uses the forceps indiscriminately may think he does not rupture the peritoneum, but he does.

Dr. Davis, Philadelphia: One way of expediting labor is a free movement of the bowels by an injection of castor oil, spirits of turpentine and yolks of eggs. Antipyrine, not to exceed $2\frac{1}{2}$ grains per hour, will expedite labor. Greater doses will probably delay labor. In my mind there are only two indications for the use of forceps, viz: *those of Schroeder*, "positive danger to mother or child." No consideration of time would induce me to use them.

IMPAIRMENT OF THE VOICE, IN FEMALE SINGERS, DUE TO DISEASED SEXUAL ORGANS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, June 8, 1892.

BY C. HENRI LEONARD, A.M., M.D.,

PROFESSOR OF THE MEDICAL AND SURGICAL DISEASES OF WOMEN IN THE DETROIT COLLEGE OF MEDICINE, DETROIT, MICH.

This is a subject not treated of, or ever mentioned, in any of our text-books upon the diseases of women, so far as I am acquainted with them. Indeed, the only article I have seen upon the matter was one from Dr. Von Klein, of Dayton, Ohio, and appeared in a copy of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of last year. In this article the doctor makes these statements: "The most difficult cases the laryngologist has to treat are the diseases of the throat caused by the disturbance of the ovaries. It is a common thing to meet with cases of acute inflammation of the tonsils, larynx, pharynx and fauces, in females, during the menstrual periods. I have observed the voice of many professional singers, who have applied to me for treatment during the menstrual period, to be defective in gravity, force, and timbre, producing, in many cases, a husky sound as of a low masculine order. In many cases of ovarian disturbance, enlargement and hypertrophy of the tonsils and soft palate are observed, hence the laryn- an accomplish but little without the assist- competent gynecologist."

To better introduce my subject I will now read a letter from a quite noted soubrette who was under my care for some months for uterine trouble, and who had herself noticed a marked failure in her voice, but did not specially attribute it to uterine disease, until I particulurly called her attention to it as the probable reason for her voice failure. Her letter is dated "Dec. 5, 1889," and reads as follows:

"Dr. Leonard: I am now leaving here and have written in a hurry and do not know as I have given you the points you wished, but this one fact is conclusive and that is, the sexual organs not only *go with the voice*, but *control* it. I have been an actress and singer for a number of years, and as my special trouble grew upon me my voice lost purity of tone, and also lessened its range, till, from a high mezzo, I could do only a contralto range. Now that I am nearly recovered I sing with greater ease and have regained purity of tone, whilst in the upper register of voice *I have gained two full tones*, and am firmly convinced that I should have lost my singing voice entirely had I not have had the special treatment by you. My improvement has been so great that the singing professor, under whom I have been training, not knowing I was under special treatment, has taken to himself the full credit for my increased power and range of voice. Sincerely yours, etc."

Some two years after this, or during the past fall, the actress being in the city, she called upon me and reiterated what she had witten me in 1889, saying that she had permanently retained the two upper notes that she had gained during my treatment, and that there had been no relapse of the special troubles for which she had been treated by me. She also gave the history of a friend of hers, another professional singer, that had a similar experience to her own.

Now, while I do not think an increase of two notes in the vocal scale, from the treatment of a singer's sexual organs, is an occurrence to be expected in the majority of instances where a soprano may need a gynecologist's attention, still, I am satisfied that the popular notion that obtains with them—a huskiness of the voice at the time of the periods, is well founded; and I am sure my experience with several other cases would warrant me in asserting that the tone, pitch and range of voice of female singers is seriously encroached upon whenever they have *any* disease of gravity affecting their sexual organs.

It will be noted that Dr. Von Klein laid the greater stress upon the ovarian troubles: in the case of mine just reported, as well as in several other cases that have been under my care, the ovaries were not specially diseased; indeed, the ovarian symptoms were the least prominent, the main ones being uterine. In the case reported of the soubrette there was anteflexion and narrowing of the uterine canal, with severe endometritis. These trouble were treated and no attention paid to the ovaries, their recovery taking place without this. Of course, the two organs, uterus and ovary, are so intimately connected arterially and nervously, that a severe uterine inflammation may set up an irritation in the ovary; this I do not attempt to deny: but, curing the uterine trouble, the ovarian is cured as well. What I would specially wish to emphasize then, in contra-distinction to the claim set up in Dr. Von Klein's paper, is that to the uterus, more than to the ovary, we must look for the cause of imperfect voice in many of our female singers.

When we consider the intimate connection of the uterus with the great sympathetic nervous system, and the frequent deleterious impression of the stomach, heart and head reflexly therefrom by the way of this nervous connection, it is but carrying the same reflex process but one step farther when we assert its reflex influence over the organs of the voice. If good singers have themselves noticed this, at their regular monthly periods, and so have abstained as much as possible from the critical exercise of their voice at these regularly recurring periods, and many have so told me that they have noticed the prejudicial influence of these periods over their voices, then it stands to reason that an inflamed or conjested uterus will, at other times, also prejudiciously affect the organs of voice and song.

In tracing out the chain of nervous connections between the uterus and the larynx we find that, according to Bernard and Bischoff, if the spinal accessory nerve be cut or torn away, all the other cranial nerves remaining intact, there will be complete loss of voice. The same phenomena are observed if the inferior laryngeal be destroyed.

The motor fibres of the pneumogastric, so far as the formation of the voice is concerned, are derived from the spinal accessory: the pneumogastric is specially brought under control of the uterus from .its connection with the solar plexus that so freely supplies the heart and stomach. An inhibition of the spinal accessory could, physiologically, occur by a perverted nerve influence set up at the uterine or inferior hypogastric plexus; this influence would be transmitted directly to the solar plexus and reflexly therefrom to the spinal cord, heart and stomach, and then through the pneumogastric to the spinal accessory, recurrent laryngeal and glosso-pharyngeal, thus paralyzing, in a measure, the motor influence of all these nerves over the muscles of phonation.

The muscles governing pitch of voice are the crico-thyroid and the thyro-arytenoid—the muscles of tension of the vocal cords. These cords vibrate from 572 times (the gravest note) to 1, 606 times (the highest note) each second of time, in our soprano singers. You can readily see, then, that the slightest impairment of the normal innervation must necessarily render organs so extremely delicate as these cords are deficient in their higher tensions and consequently imperfect in their range and action; huskiness, from the less tension of the vocal cords, would be one of the first symptoms of deficient nerve influence, a loss of a tone or so the natural result of a greater impairment of its nervous tonicity.

When you now combine these immensely frequent vibrations of the vocal cords, in the female, with the other muscle combinations taking place in the phenomena that we term phonation, remembering that there are something over one billion of these combinations with the other laryngeal muscles (for Bishop avers that for every modulation of the human voice there are, at least, 100 muscles that must be brought into perfect coördination), we have the grand total of 20,000,000,000,000 of muscular combinations in phonation; when this is properly considered, I say, the only wonder is then, not at an occasional lapse of coördination or the loss of a tone, but that even in the most perfect health and training such exactness of the scale as seen in the vocal accomplishments of our singers can ever be obtained.

That there is this intimate connection between the nerves of the uterus and those of the larynx, as above claimed, I am positive of, for I have time and again witnessed their reflex action on several of my patients. One of the most distressing exhibitions of laryngeal spasm I ever saw was in the person of Mrs. S., 40 years of age, and suffering from a large uterine fibroid. She had this reflex laryngeal spasm to that extent that suffocation was imminent at each application of anything to the endometrium. I, as well as the patient, dreaded each bi-weekly visit, as she would strangle until she became black in the face, and lose consciousness, at times, at each application; any point of the uterine canal seemed equally sensitive whether probe, sound or medicament was used. As the uterine irritation was progressing towards cure she had these spasms less violently; but the immediate and direct connection of the uterine nerves with those of the larynx was conclusively shown, dozens of times, to the students that were with me at my clinics whenever this patient would call.

I have under treatment, at the present time. a private patient that manifests these laryngeal spasms at each intra-uterine application, though to a much less degree of severity than the case just detailed. Still another private patient, though having no spasm, has a marked laryngeal pain at each application, and during the times of treatment complains of great pain in the larynx; indeed, the most of her pain is referred to this organ rather than to the uterus, though there is no laryngeal difficulty, but a marked endometritis. These cases of laryngeal spasm and pain were and are not the minor laryngeal difficulty known as "globus hystericus," a disease affecting reflexly the vocal organs and throat and which was well-known in the time of Hippocrates.

A further case of prejudicious influence over the voice from the reflex action of the pelvic organs, though seen in the male, is detailed by Dr. Sivers, of Ft. Wayne, Ind., in a recent number of the *Medical Age*. The doctor's case was one of chronic laryngitis where the patient could not speak above a whisper for two years and where the exciting cause of the trouble was found to be pile tumors in the rectum; proper treatment being addressed to them the difficulty of voice was permanently relieved. The nerve fibres in the male pelvis are analogous and similar to those in the female, hence the results obtained in Dr. Siver's case but confirm the position taken in the claims I have made of the influence of the pelvic organs over the voice; a further analogue is seen in the modification of the voice in soprano male singers who have been submitted to castration.

PERITONEAL IRRIGATION AND DRAINAGE.

Read in the Obstetrical Section at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich , June 7, 1892.

BY A. H. CORDIER, M.D.,

OF KANSAS CITY, MO.

If an apology for presenting a paper before this great body of learned men, is necessary, my excuse is, the diversity of opinion among surgeons, and in some instances ignorance, of when and how to use intraperitoneal irrigation and drainage. You will find one. surgeon using neither, another resorts to drainage alone in some of the many ways of using, another uses both according to his ideas, which of course he is entitled to follow, provided he gets the good results from his method of using these agents that are obtained by other surgeons perhaps by a different method.

The latest works on abdominal and pelvic surgery contain, like the older books, very short and misleading articles on the indications for peritoneal irrigation and drainage, and still less explicit are the directions how to use these agents for good intelligently and correctly. This diversity of opinion among revolving book rack authors leaves the inexperienced beginner in a position of perplexity and doubt as to the special course he is to pursue in his early work. No one should undertake to irrigate or drain a peritoneal cavity before he has witnessed and assisted a master of this special branch in our healing art in a large series of cases, and has mastered his teacher's technique.

If you hear an operator condemning drainage, and on examining his mortality column, find a death rate of 8 to 12 per cent. in a series of cases and a number in this list under heading of "cause of death unknown," "peritonitis," "heart failure," "hæmorrhage," you may rest assured that some deaths could have been averted by the irrigator and tube. "People seldom improve when they have no model but themselves to copy after." To illustrate this diversity of opinion among gynecological and surgical writers, I will with your kind indulgence, quote from a few of the standard textbooks. One author condemns drainage and on same page tells how he uses it: "A rubber tube perforated for three inches of its abdominal end and long enough to run out over the edge of the bed into a basin filled with carbolized water to prevent the entrance of germs." The same writer speaks of secondary drainage to remove putrid discharges collected in the pelvis to prevent septic symptoms, and adds: "Of course no one would think of performing this operation until septic fever is evident."

Another writer says: "If a drainage tube has been used it should be well *corked* (italics mine) until symptoms of blood poisoning arise when it is to be opened frequently to admit of the escape of any fluid that may be in the cavity * * * and a hard rubber syringe passed to the bottom of the tube to remove what has not run out."

A noted German operator and author writes: "After a vaginal and supra-vaginal hysterectomy, I continue to use drainage of the pouch of Douglas after this operation in spite of various publications which state that the omission of this is not injurious. I attribute my success essentially to this treatment in connection with two observations which I have made. One case perished from septic peritonitis in which the tube was allowed to escape and a collection of secretions formed at the bottom of Douglas pouch. The second case I was induced by the publication of successful cases without drainage to omit the latter which I otherwise employed. The patient recovered well from the shock of the operation; in the course of the second day, however, an extremely threatening collapse occurred with pallor of countenance and increased frequency of pulse. The symptoms disappeared at once as I had the patient sit up, and separated the sides of the opening in the vault of the vagina by passing my fingers into it; a large amount of sticky and foul fluid was discharged. From this moment the patient got better." He says on the indication when to remove the drainage tube: "usually between the third and fourth day a peculiar period of drawing is experienced in the umbilical region; I then remove the tube. Since I have employed this method of treatment the results of supra- computation have become essentially better ’ This great operator lets this lesson from nature in drainage teach him nothing. In 77 salpingectomies this same operator had 14 deaths, with no history of drainage. Of this number 10 died of sepsis or the result may be traced to this source as a cause.

One aspirant to operative fame, when discussing drainage with a professional brother, said: "I do not see how you can drain the pelvis with the tube standing straight up." His wise senior replied: "Turn the patient on her side and let it run out."

I have seen a drainage tube pushed down into the pelvis and the dressings and bandage applied over its outer extremity, and that too by a teacher before his class, at same time remarking that he had had a number of fecal fistulæ following the use of the tube and that it was very troublesome to keep the dressings clean and dry.

Hydrostatic pressure on the diaphragm has been advanced as a counter-indication to the use of the irrigator. An outward flow during your irrigation is obtained if used properly; you rarely wash the diaphragm unless you have been using the Trendelenburg position and had your patient's diaphragm and liver flushed with pus or other septic fluids during the operation. You do not use water hot enough to paralyze the solar plexus as some apprehend.

The general surgeon long since called attention to the fact that old abscesses with a limiting wall if disturbed, in many cases lead to systemic infection by changing the character of this breastwork to one with absorbing functions. While this fact was long since recognized, it was not suspected that the changes wrought in the surrounding tissues by surgical interference lead to a secondary infection by the admission of new agents into the abscess cavity, yet every effort was made to keep an outward flow of the discharges by drainage, through counter openings, vapor baths, cathartics, diuretics, etc., etc., all drainage agents.

If we accept or reject the germ theory of the suppurative process and its prevention by *antiseptic* or *aseptic* methods the truth remains unaffected that it has been through this channel of purification that we have learned that cleanliness in surgery is next to godliness. If germicides are or are not used while operating the deluent acts as an absolvent to the dirt or as a destructive agent to the pathogenic bacteria, and the same end is obtained provided both methods are carried out with equal care and diligence, although possibly by a different process. One by washing away the dirt or germs present, the other by destroying or inhibiting those not destroyed.

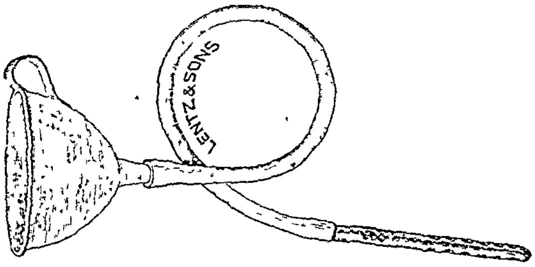
The object in either method is to reduce to a minimum the amount of chemical substances or number of germs so that the functions of absorption, destruction, and elimination are not overtaxed, at the same time reducing to the lowest ebb the fermentative fever tendency, by removing at the time of the operation as much of the fever producing agent as possible by irrigation and keeping the locality clean by thorough drainage afterwards. There are localities in the body where germicides cannot be used in strengths sufficient to have the action desired without producing toxic effects. Fortunately, it is in this same locality that we have the greatest absorptive and eliminative function developed.

In peritoneal surgery irrigation and drainage are positively indicated and indispensable in the majority of cases. The same principles hold good in draining the peritoneal cavity that are applicable to other arts of the body. No surgeon, with all the antisep-c precautions possible to be used in opening a dif- sed abscess of the thigh or other parts of the body would think of such a thing as at once closing the wound hermetically, leaving many broken down shreds of diseased tissue dangling in the abscess cavity. He may have irrigated the cavity thoroughly with a "1 to 1,000," yet he would not feel it safe to close the wound until after he had made counter openings and introduced drainage tubes. This being as near ideal surgery as it is possible to obtain in these cases. The presence of the tube does not have special healing virtues only in as far as they keep the parts free from the poisonous discharges, permit the structures to come in contact and heal in their normal relations and at the same time by this system of drainage avoid the absorption of septic and putrid material.

It is a fact long since recognized that aseptic blood *clots may become organized*, if not absorbed, and give rise to firm and dense adhesions. If any pus forming agents are introduced during the operation, or even those already present in limited numbers, the presence of much blood in the peritoneal cavity prevents to some extent the absorption of these pathogenic bacteria and their destruction by the phagocytes, and thus being allowed [illegible]emain, rapidly multiply in this fertilized hot-bed, p[illegible]yzing this function of the white cells by the overwhelming numbers, attacks the peritoneum, producing a rapidly fatal peritonitis in the majority of instances. If this truth is accepted no conscientious surgeon should fail to irrigate and drain after operations for the removal of pus tubes, dermoids, etc., etc., or where there was much effused blood during or following an intra-peritoneal operation. A peritoneum cannot absorb liquids as long as it is, so to speak, "water-logged" or œdematous. Any method or treatment, whether by drainage or by hydragogues have the same object in view, that is the removal of the effused liquid or its elimination by hastening its absorption. In "hulling" out adherent pus tubes, dermoids, breaking up adhesions, many surfaces are of necessity left denuded of peritoneum. These surfaces have very poor absorptive powers, yet they pour out much fluid which, if not removed early, is liable to become putrid or septic. It is a well recognized fact that a traumatism produced by aseptic agents leading to plastic inflammation is localized to the seat of the injury and does not spread much beyond this location as long as the surroundings are kept aseptic. Also that the germ producing powers of a once begun septic peritonitis are unlimited and the bacterial hot bed being located within the cavity affected, accounts for its wide spread. With this truth before us we should in every case do all operations, if not antiseptically, aseptically, and to insure the maintenance of this clean condition, endeavor to keep the cavity as clean as possible after the operation by not only draining the non-decomposed secretions and thus reducing the severity of the aseptic fever to the lowest ebb, but at the same time reducing to a minimum the number of pathogenic germs accidentally or unavoidably introduced during the performance of the operation, and thereby thwart an attack of acute peritonitis. In cases operated on where there existed at the time of the operation a free dropsical fluid, a drainage tube must be introduced, as the peritoneum cannot absorb anything when in this condition, and by keeping it dry a few days the effusion in many cases ceases to re-accumulate unless the presence of the fluid be due to malignant disease of the peritoneum or other abdominal or pelvic viscera. *In old and debilitated patients* the absorptive powers of the peritoneum are lessened and in these cases we find an indication for drainage. *Operations involving structures in a state of inflammation* are always followed by a profuse flow of serum, which is more liable to become purulent or septic than if performed in healthy structures. You have less pain in the cases that are drained as the pain from pressure on the nerves caused by the effused liquid is removed with the liquid. Fluid is liable to undergo decomposition from contamination through the intestinal walls. The accumulation of fluid in the pelvis must be prevented, if possible, after all operations.

The above language as a short plea for drainage is equally as applicable to the use of hot water irrigations in abdominal and pelvic surgery, for where drainage is indicated irrigation is demanded. Many surgeons decry the use of the tube by stating that they do not see any cases in which it is needed.

Irrigation.—Freshly boiled, distilled water cooled to 102° F. to 110° F., should be used in irrigating. After the performance of the operation and before the stitches have been introduced, the cavity should be thoroughly washed by means of the irrigator.

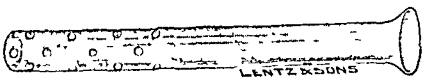


The irrigator consists of a rubber tube three feet long and three quarters of an inch in diameter, to one end of which is attached a funnel, to the other a hard rubber nozzle about ten inches long with side perforations, the distal end being closed except a small opening in the center. The patient is turned on her side toward the operator, who with two fingers of the left hand introduced near the lower angle of abdominal incision and slightly separated, the nozzle of the irrigator is introduced (having first started the water to running) into the inferior angle, is guided by the fingers to the lowest recess of the pelvis and moved about from one locality to another while the water is being poured into the funnel from a pitcher held in readiness, to be used for this purpose only.

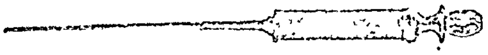
Just before beginning the irrigation the anæsthetic should be pushed to profound anæsthesia; if this precaution is not observed, the patient will resist your efforts and cause the intestines to protrude through the incision and cause unnecessary delay in replacing them and keeping them replaced. This is an illustration of the stimulating and reviving effect of the hot water. While thus using the water it is surprising to see with what rapidity and force the large blood clots and other foreign bodies prese[illegible] ar[illegible] forced from the cavity. During the flow of [illegible] the operator should gently move the vi[illegible] and mis- that the fluid may come in contact with [illegible]eritoneal and corner. As long as the water comes stained, especially after using considerable hot water you may know that some hæmorrhage is going on, except in extra-uterine pregnancy with rupture or where you find much free blood and soft clots; here the water will continue to return blood stained as long as you use it and will lead the inexperienced operator to think that an alarming hæmorrhage is going on and cause him to seek the source of the bleeding. The blood stained fluid returning through the incision is much darker in this condition than if a hæmorrhage is actually going on during your irrigation. The operator should always test the temperature of the water by introducing his hand into each pitcherful as it is being raised to the height of the funnel, which is held by his assistant. The irrigator should always be started running before introducing the nozzle. In some cases it will be necessary to use much more water than in others, as in cases of ectopic gestation with rupture in which a large quantity of blood is found, or in ruptured pus tubes or profuse hæmorrhage from broken down adhesions, etc., etc. Its hæmostatic effects are often quickly noticed, much to the satisfaction of the operator, where there is an alarming hæmorrhage from torn vessels or a general oozing. Its beneficial effects are also perceptible in many cases in preventing shock or causing the patient to rally from this condition, if it exist. If your operative technique has been good and your surgery not too "chronic," your irrigation satisfactory and your drainage tube *properly introduced* you may expect recovery in a larger per cent. of these cases than you could expect without these agents.

In addition to the cases mentioned irrigation should be used in all cases of intestinal and bladder injuries where there is a perforation and extravasation, also in appendicitis, surgical operations on the gall-bladder and kidneys where there is an escape of bile, urine or pus. In using the irrigator avoid too rough handling of the nozzle lest you disturbed your pedicle ligatures and start up an alarming hæmorrhage. After thoroughly flushing the cavity the residual fluid is removed by soft clean sponges. A small quantity of the clear fluid left can do no harm, in fact in some cases, as in ruptured tubal pregnancy, it is absolutely impossible to leave the peritoneal cavity free from clots and fluid. In this condition water is left on purpose that it may aid in liquefying the soft clots entangled in the folds of the omentum and mesentery, that the liquefied product may be removed by aspiration through the drainage tube and the work of digestion and absorption by the peritoneum lessened and hastened. Having completed your irrigation and introduced your *silk worm gut* sutures, before tying them you introduce the drainage tube, which should be used with rare exceptions, where in your opinion it has been necessary to use irrigation. Some operators introduce an extra stitch at the site of the tube and do not tie it until the tube is removed; this I think unnecessary.

To Dr. Joseph Price we are indebted more than to any one American or European surgeon, for the intelligent and correct way of using these agents.



[illegible] is a straight glass one of lengths and individual cases, as one tube cannot be adjusted to accurately fit all cases. The lengths varying from three inches, for children, to nine inches to meet the requirements in very fat subjects with greatly thickened abdominal walls and a pelvis of great depth. The average length however is about six inches. I have not seen a *good* tube whose diameter was over five-eighths of an inch or less than one quarter. The tubes are straight, the end introduced has an open mouth, that large pieces of detached shreds of adhesions or blood clots may be removed by aspiration; many small round perforations mark the sides of the tube for the first inch and a half. The distal end is flanged (not down on the side an inch as I have seen in many tubes) the same as you see in the commonest tube. This projection retains the sheet of rubber dam, at the same time prevents the tube escaping into the abdominal cavity, not a very likely accident if the tube is a properly selected one and introduced in the right way. Having selected your tube, which by the way must be done before hand, that it may have been properly prepared before you are ready to use it, you introduce it precisely as was directed for the introduction of the nozzle of the irrigator into the pelvis or the region to be drained. While your assistant steadies the tube and thus retains it where you intend it should remain, you tie your sutures and accurately adjust the divided structures making the tissues closely fit the circumference of the tube. After removing the fluid collected in the tube at this time by means of a long nozzled piston syringe and satisfying yourself that everything is all right you take a piece of rubber dam fifteen inches square with a small niche in its center, by stretching this little opening you are enabled to slip it over the flange of the tube and being released contracts so accurately fitting the tube as to make it impervious, and thus avoid soiling the dressing by the escaping drainage, should it, by carelessness or from inattention on the part of the nurse, be permitted to overflow. Again removing any fluid collected, you cover the opening in the tube with absorbent cotton and neatly folding the four corners of the rubber dam over this, entrust it to the care of your assistant while the many tailed abdominal binder is being adjusted.



One corner of the folded dam is secured to the binder with a safety pin and after emptying the tube again your patient is put to bed surrounded by the usual precautions. Of course gauze is placed over the wound, around the tube, by splitting each layer and over this the binder is placed.

The nurse is instructed when and how to cleanse the tube. By this arrangement of the dressings the tube can be pumped out as often as it fills without in the least disturbing the patient by the removal of the dressings.

Every aseptic precaution should be observed in the emptying of the tube. The hands of the nurse or the physician should be clean, the syringe should be scalded each time before introducing it, the mouth of the tube must be cleansed by a pledget of absorbent cotton before the syringe is used. While cleansing the tube with the syringe if the piston fails to slip easily you may know that a blood clot or shred of some adhesions have become engaged and by withdrawing the nozzle you may, and often will suced in removing the foreign body. After drying the be a fresh supply of absorbent cotton is placed ver its mouth and the corners of the rubber dam eatly folded over it and pinned. This same precaution should be observed at each cleansing of the tube. The tube should be rotated and raised a quarter of an inch two or three times for the first twenty-four hours. This relieves pressure on the intestines, if any exist and at same time prevents the omentum becoming entangled in the holes of the tube, an accident more of an anticipated dread than of actual occurrence. After removing the glass tube if there is any fluid likely to collect within the next twenty-four hours, a small rubber tube may be left in the site of the glass tube by introducing it through the glass tube before it is removed. This in turn can usually be removed on the following day.

By using drainage as I have described, the bandages and dressings are kept dry and clean, do not have to be disturbed until the time arrives to remove the tube or stitches. When the tube fails to show much over a drachm of fluid, collected in an hour or two, the [illegible]e has arrived to remove it, unless this small a[illegible]nt of fluid is purulent or offensive. Ordinarily the tube can be removed with safety on the second or third day. The opening soon closes and there is no more danger of a ventral hernia following than if drainage had not been used.

Drs. Price and Wylie years ago called attention to the fact that many deaths from so-called shock were in reality deaths from concealed fatal hæmorrhages and advocated the introduction of the tube in these cases in which there was free oozing during or following an operation. The presence of the tube, by keeping the peritoneal cavity free from lymph is a direct and most efficient hæmostatic. This fluid normally present in small amount is greatly augmented by the manipulation of the peritoneum during the performance of an abdominal section, and like the moist fomentations over the scarrified surface of any other part of the body, promotes bleeding and prevents the formation of firm clots in the mouths of the small blood vessels torn across while breaking down adhesions.

Gentlemen, if you will use "Peritoneal Irrigation and Drainage" as I have described it, you will not, I am sure, condemn the method. They will help reduce your mortality, I am sure.

1016 East 9th Street.

DRAINAGE IN ABDOMINAL SURGERY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY DONNEL HUGHES, M.D.,
OF PHILADELPHIA, PA.

Drainage of the peritoneal cavity is one of the most important subjects connected with abdominal surgery, and yet at the same time, it is one of the most disputed points. The difference of opinion that exists to so marked a degree is due, no doubt, to the fear that the tube may act as a source of septic infection, or by its use the abdominal walls are weakened to such an extent as to favor the development of ntral hernia or the formation of a fistulous tract.

accepted fact, that the object of drainage is ove all those deleterious substances which, if ed to remain within the peritoneal cavity or any other cavity within the body, would in a greater or lesser degree retard the progress of the case toward recovery, and in many instances endanger, if not sacrifice the life of the patient. I do not believe that it is necessary, or even advisable, to use drainage in every case of abdominal section. If aseptic conditions are scrupulously maintained throughout the operation, and all bleeding vessels secured, the abdominal cavity thoroughly irrigated with pure distilled water (that is warmed and has previously been thoroughly boiled), whenever any blood or foreign substance has escaped into it—under these circumstances drainage is not necessary; and if not necessary, it is certainly not advisable. It should not be lost sight of for one moment that the drainage tube is at best, a foreign body, and capable of causing a good deal of irritation, and in many cases, if great care is not exercised, it is a fruitful source for the entrance of septic matter. Cases very frequently present themselves in which it is absolutely demanded for the safety of the patient. The cases in which it should be used are very numerous. I will mention the cases in which its use is necessary: 1. When pus or any other septic material has entered the peritoneal cavity before or during the operation. 2. When extensive adhesions have been severed, and there is an oozing surface. 3. When hæmorrhage is feared, or when present and cannot be controlled. 4. Where there is malignant disease and danger of subsequent infection. 5. In cases where simple or tubercular peritonitis exists, or where there is a large accumulation of ascitic fluid. When it is deemed advisable to use drainage, the question then arises, what device should be employed for that purpose? It should be answered in the following way: If there is hæmorrhage that cannot be controlled by the application of ligatures or hæmostatic forceps, or by some of the many methods that we have at our command, the best plan is to pack the bleeding cavity with a strip of iodoform gauze and bring the end of it out at the lower angle of the wound. We then have tampon and drainage combined. At the expiration of forty-eight hours the gauze should be removed. If the bleeding has ceased and there is need for drainage, a small rubber or glass tube may be substituted for the gauze; if there is still a tendency to hæmorrhage, the gauze may be reintroduced and allowed to remain a few days longer. In cases where there is oozing that has been caused by the breaking of adhesions, or when pus has escaped into the peritoneal cavity, or when the large bowel has been ruptured, and the rent cannot be found, a glass tube open a both ends, and perforated on its sides with small round holes, should be used. The tube should be long enough to reach from the lower angle of the wound to the bottom of Douglas' pouch. The circumference of the tube should be determined by the quantity and consistency of the material that it is expected to convey out of the cavity; the smallest tube should be selected that will properly carry the fluid. Care should be taken when the tube is introduced that it does not press upon a loop of intestine instead of upon the floor of the pelvis. Before inserting the tube a suture should be introduced and left unfastened, its object being to close the opening that remains after the removal of the drainage tube, otherwise a weak cicatrix might remain, that would favor the formation of ventral hernia. After the tube is in its proper position, and the abdominal wound closed and the usual antiseptic dressings applied, a piece of rubber sheeting about one foot square, with a small hole in the centre of it, should be sprung over the tube in order to prevent the discharge soiling the dressings and infecting the wound. Aseptic absorbent cotton should then be placed over the opening in the tube to absorb the overflow, and over this the rubber sheeting is folded and retained in position with a safety pin. The most important point to be observed in the use of the drainage tube is frequent and thorough cleansing. No regular or fixed time can be set for emptying the tube, but a good rule should be to clean it whenever it is filled with fluid, no matter how short the interval. The fluid is best removed with a long nozzle uterine syringe, or a piece of rubber tubing attached to an ordinary syringe. When hæmorrhage is indicated by the flow of pure blood from the tube, the blood must be constantly removed, as by keeping the bleeding surface dry coagulation is promoted, and the hæmorrhage very often arrested. After the drainage tube has been in use for forty-eight hours, it becomes surrounded by the tissues, which are retained in that position by adhesive inflammation, therefore after that time, it is of very little if any use in draining the abdominal cavity. It will, however, drain the pelvis for a much longer time. The tube should be raised two or three inches out of the wound every day and turned completely around on its axis, and allowed to drop by its own weight, in order to prevent prolonged pressure on any one point, and also to prevent the organizing exudation from penetrating the lateral openings in the tube. The drainage tube should be allowed to remain until the discharge is reduced to 2 or 3 drachms of clear serum a day, this usually occurs within three days. After it has been removed, the free ends of the suture that was left for the closure of the drainage tube wound should be tied.

NON-MALIGNANT, NON-TUBERCULAR, NON-HYDATID CYSTIC DISEASE OF THE PERITONEUM.

Read by invitation in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JAMES F. W. ROSS, M.D.,
OF TORONTO, ONT.

The subject selected is not likely to prove of interest to the general practitioner; it is not likely to open up any practical discussion, but it is of interest to the abdominal surgeon. The disease to be discussed is allied with acute peritonitis on the one hand and intermittent pelvic peritonitis on the other. The disease is cystic and yet inflammatory. It is therefore essential that we should consider the pathology of cysts and the pathology of peritonitis. Authors vary in their classification of cysts, and yet agree in the main distinctive features of these interesting aberrations from a normal condition. For our present purpose we need but remember that we have epithelial cysts and endothelial cysts. Epithelial cysts are cysts of retention. Endothelial cysts are formed of the dilatation of cavities in connective tissue such as bursæ, tendon sheaths and obstructed lymph channels (Zeigler). An inflamed bursa, from the inability of the serous lining to absorb the fluid poured into its interior, becomes a cyst, and if we would carry the analogy to what might be considered too great a length, the inflamed peritoneum, from the inability of its serous lining to absorb the fluid poured into it, becomes a cyst. Newly formed or false membrane may surround fluid so that portions of the fluid become collected in sacs, and thus inflammatory cysts are formed. Pus is surrounded in this way in the abdomen, and pockets of encysted pus are shut off from the general peritoneum. The very same formation of pockets of encysted serum takes place subsequent to a peritonitis.

We have other cysts, such as the cysts of disintegration, and the cysts formed around foreign bodies, such as hydatids and blood cysts, but with these we have nothing to do at present. But I wish to mention the cysts that are found filled with lymph instead of serum, from the obstruction of the lymph channels; with blood instead of serum, from the intracystic rupture of one of the newly formed and delicate vessels; with air instead of serum, a condition that has been noticed by several good observers. The latter condition is a pathological curiosity. One case in which this condition was found has been well recorded in the London Pathological Society's Transactions, Vol. xxii. The patient suffered from a duodenal ulcer, and the supposition was that flatus escaped beneath the peritoneum and produced the condition. The cysts were like the cystic dilatations so frequently found hanging from the fimbriated extremity of a *normal* Fallopian tube, or from the tubules of Kobelt in a *normal* broad ligament. Some were as large as a hazel nut. They hung by a single pedicle. Some similar ones contained coagulated blood instead of air, but even in these, hollow spaces were found on section. The parietal as well as the visceral peritoneum was affected. In his discourse on the case I find the following, written by the author of the paper: "Were the cysts which contained the air of independent formation, or were they produced in any way by the emphysematous bubbles? Against the first view it must be urged that cysts of the peritoneum are hardly known; nothing of the kind is mentioned in the standard text-books." In the latter sentence you have my excuse for presenting to you such a subject. That I should thus early in my lifetime have met with two cases would seem to indicate that the disease is not of such rare occurrence. My friend, Dr. C. A. L. Reed, has promised to put two cases on record and to give his views regarding the etiology and treatment of the disease. We will return to the pathology after detailing the cases. My own cases were as follows:

Case 1.—Mrs. A. L. æt. 22, had evidently suffered from gonorrhœa two and a half years before she came under my observation. The history was that of intermittent pelvic peritonitis. When maki[illegible]mination, I felt what I concluded was a [illegible]. and asked her physician, Dr. Dawson, why she kept her bladder so full when she knew we required bladder and rectum empty. She was at the time under the influence of an anæsthetic, so that I passed a catheter myself.. No water came, and yet I felt sure that the fluid must be in the bladder. The wall surrounding the fluid was lax and not tense like the wall of an ovarian cyst. I then felt two pus tubes, one on each side of the uterus, and advised their removal. The collection of fluid was a mystery I was unable to solve.

On opening the abdomen three days after (namely, on November 4, 1891), I found peritoneal cysts looking like white grapes. Owing to the matting of bowel and omentum to some mass, I put the patient in Trendelenberg's position to facilitate the exploration. After pulling up the omentum a dark-colored cyst was found, occupying the position usually occupied by the bladder in front of the uterus. It had a grayish, semi-gangrenous appearance, and yet when tapped, the serum that was removed was clear, limpid and transparent, and of light amber color. The dark appearance was evidently due to the venous blood filling delicate newly formed vessels. About 4 ozs. of fluid were withdrawn. The sac then bled very profusely upon attempting to enucleate it. It was in the way, and was removed by ligature in sections. The pus tubes were then peeled out and tied off. The severe manipulations had ruptured several of the small pendulous cysts, and they bled freely. It was therefore necessary to tie off about twenty-five of these little bodies. Each was filled with the same kind of fluid, and each hung by a slender pedicle. They resembled the little pendulous cysts accompanying and supposed to be indicative of malignant disease. May not these little bodies, when accompanying malignant disease, be simply due to the prolonged and gradual peritoneal irritation?

The patient made an excellent recovery. I fear that she would have lost her life from hæmorrhage had I not used Trendelenberg's position, because it was difficult to find and tie all the bleeding points. The patient has since developed secondary syphilis, but I presume that it has been contracted since operation.

Case 2.—Mrs. H., æt. 33. First seen October, 1889, when I diagnosed uterine fibroid, and advised removal of ovaries and tubes. Patient went into the hospital intending to have the operation done, when she developed an abscess in the left groin. I opened this and found that it led down to the left side of the cervix uteri. She then convalesced, and left the hospital without having any further operation. The pain continued and the sinus remained unclosed. I saw her again in January, 1892, and advised further operation to discover the exact nature of her trouble. I operated on February 12, 1892. On opening the abdomen, I found a fluid tumor, evidently between the bladder and uterus, very adherent to bowel and desperately fixed in the pelvis. Patient placed in Trendelenberg's position, and the adhesions between the cyst and rectum and uterus torn through. I had difficulty in avoiding the ureter on the left side. At last I was able to make out the left uterine cornua. The left tube was coiled up and somewhat thickened, and very hard. The tumor I suppose was one of the left ovary, but so adherent that no definite pedicle could be made out. I tied it off both at uterine and rectal end. Hæmorrhage from the bowel was controlled in several places by ligature. The peritoneum was studded in several places with small grape-like cysts exactly similar to those mentioned in Case 1. I tied off about six or eight of them. The right ovary and tube were not enlarged, though imbedded in adhesions. The patient made an excellent recovery and is in splendid health.

Such cysts as those described are not, so far as I know, found in any other serous cavity. Why should they affect the peritoneum alone? I believe the answer to this question will give us a clue to their true pathology.

I recognize two forms of peritonitis, acute and chronic. The acute may become chronic, and if the formation of adhesions be considered as a chronic condition, then acute peritonitis may be said to always become chronic.

Acute peritonitis may terminate in the absorption of the fluid or in the non-absorption of the fluid poured out.

It may terminate in the formation of adhesions or of false membranes. It may be purulent from the first or become purulent, and the pus may be pocketed in multiple pockets or the serum may remain unabsorbed, and become pocketed as it did in Case 1, and terminate in the formation of numerous pendulous cysts.

Now to return to the pathology of cysts. Are these cysts simply the representatives of isolated pockets, or are they formed in some other manner? My own belief is that that they are simply the remnants of pieces of false membrane enclosing serum.

Cysts filled with air we have already considered. There are three other forms, excluding dermoids and hydatids, namely: those filled with serum, lymph and blood.

The lymph-filled sacs are probably formed by the formation of false membrane over the stomata and the escape of lymph beneath it. But believing as we do, that the lymph stream is away from and not towards the peritoneal cavity, it would appear as if this theory of lymph-filled cyst formation were incorrect.

How are the blood cysts formed? Is the cyst originally a serous cyst with secondary hæmorrhage into its cavity, or is it originally an extravasation that becomes a cyst? I believe the former, because subperitoneal hæmorrhages are usually found as flat spots of ecchymosis.

In the two cases recorded, the cyst wall was like the very finest tissue paper. It did not look like peritoneum, and I do not believe that it was peritoneum. From the peculiar foldings and bands running from surrounding parts to the cyst, I concluded that the wall was composed of false membrane. If composed of false membrane, then the cysts must be inflammatory in origin, and we had sufficient evidence of old inflammation to lead us to believe that this might be the case. And now in conclusion, let me say that I believe that we have a distinctly inflammatory cystic disease affecting the peritoneal cavity; that it is not of rare occurrence; that if the condition producing the inflammation be removed and the cysts tied off, the patient will become entirely well; that I know nothing of the ultimate result of such a case if left alone; and that I hope others will record any cases of the kind with which they have met.

Two practical points might be dwelt upon. First, that the rupture of such little vesicles might be a source of hæmorrhage into the peritoneum after operation: and secondly, that to avoid the danger of hæmorrhage, they should be ligated with fine silk when met with during the course of operation.

A REPORT OF EXPERIMENTS GERMANE TO THE SUBJECT OF ABDOMINAL SUPPORTERS AFTER LAPAROTOMY.

Read before the Section of Gynecology, at the Forty-third Annual Meeting of the American Medical Association, held in Detroit, Mich., June 10, 1892.

BY ROBERT T. MORRIS, M.D.,
OF NEW YORK.

Rabbits were used for the experiments because it did not happen to be convenient for me to use larger animals, although the latter would have been better. An incision about an inch and a half in length was made in the middle abdominal line in a series of adult rabbits and then the wounds were closed with catgut in two tiers. The first tier included peritoneum, muscle and fibrous tissues. The second tier united skin margins.

The method of examining the character of repaired tissues afterwards consisted in dividing up the abdominal walls into half inch wide strips, cut transversely, the rabbits having been killed with chloroform. The strips were then dissected in such a way that skin was separated from muscles and muscles from peritoneum. The strips of separate tissues were tossed into a beaker of water to prevent drying while tests were being made to determine the strength of any one tissue. The apparatus for the testing consisted of a pair of screw clamps and a spring balance registering pounds up to fifty. One end of a strip of tissue was fastened between two little blocks of wood with one screw clamp. Then the other end of the strip was gripped in the same way with the other clamp. The spring balance was hooked to one clamp. Then I pulled on the other clamp and watched the indicator of the balance until the tissues gave way.

The first rabbit was killed at the end of the third day. The strips of skin from an unwounded part of the abdomen pulled apart at a pull of about eighteen pounds. A corresponding strip of wall, including muscles and fascia resisted a pull up to about sixteen pounds. The peritoneum pulled apart at about seven pounds tension force.

Tissues of strips taken from a sutured segment, after the sutures were removed did not hold as far as the one pound pull point in this first rabbit.

At the end of seven days, the second rabbit was killed, and I wasted all of the strips in trying to get the delicate peritoneum separated fairly for tests. A third rabbit was then killed immediately and I learned that by a little trick of pinching up peritoneum in a certain way it could be dissected away from muscular walls. A strip of normal peritoneum and a strip of peritoneum including the wound line, each gave way at almost precisely the same tension point with eight pounds pull. A strip of normal muscular wall gave way at fourteen pounds pull, and a strip including wound line, gave way at the wound line with five pounds pull. A strip of normal skin pulled apart at about seventeen pounds tension, and a strip of wound skin gave way at two pounds pull.

At the end of ten days the fourth rabbit was killed. It was quite evident that the peritoneum at the wound line was similar to normal peritoneum in every way. At this time the muscular walls began to give way at the point of some stitch hole in the wound line, and although the separation was principally in the wound line, the tear began to extend into the normal tissues in the vicinity when the tension force was exerted. The skin still tore through the wound line without involving any normal skin in the tear.

At the end of fourteen days the fifth rabbit was killed. Wound peritoneum similar to normal peritoneum. Muscular tissues at the wound line did not tear open along any one direction, but when the strips were subjected to tension the fibres of the strip began to slide from each other very much as the threads of some woven material might slide apart. This process took place in strips from the wound line at practically the same pulling force that was required for separating the tissues of normal strips which gave way in a practically similar manner. In this fourteen day rabbit the skin still gave way in the wound line at a lesser pull than was required for the normal skin, but the sliding of fibres was observed to begin to extend into normal skin on either side of the wound at this date.

At the end of eighteen days the sixth rabbit was killed and all structures were found to be united by reparative processes as strongly as they ever would be apparently. It was observed, however, that tears which began near the wound line always ran to a stitch depression, or else they began at a stitch depression and extended out into the surrounding tissues.

In the seventh rabbit, which was killed at the end of twenty-one days, and in the eighth rabbit, killed at the end of thirty-eight days, the same observations were made practically as in the eighteen day rabbit. It was perfectly evident that if the cut structures of an abdominal wound are properly sutured at the time of the operation any supporter applied after the period of repair has passed are superfluous as far as prevention of hernia is concerned, and on the other hand, if any weak point remains as a result of imperfect suturing, a supporter is useless in the way of helping out the defect.

The tiny depressions left at the site of sutures were the weakest points in the abdominal walls of the rabbits, and in the human species any little portion of abdominal wall that was not perfectly united would in the same way remain as the weak point.

Several years ago, before I had engaged in abdominal surgery, it was my fortune to be in a position to see numbers of herniæ that had followed abdominal operations by different operators, and I afterward learned that these cases occurred in the practice of men who employed the single suture for all structures of the abdominal walls. I adopted very early the plan of suturing the separate structures of the wound separately and as a result have never had a hernia follow a laparotomy. If one ever does follow I shall suspect that I may have been in a little too much hurry at the time of the operation. One or two of my acquaintances who use the single suture have not had herniæ follow, but they employ a large number of the single sutures and place them very closely together.

The plan of suturing that I have followed consists in first suturing peritoneal margins together with catgut that is absorbed in one week. The next tier of sutures is composed of catgut that is absorbed in eighteen days, and this series of sutures is employed for very close approximation of the muscular and fibrous structures. The third tier of sutures closes the skin wound and is composed of catgut that is absorbed in seven days, but if the patient is very fleshy a catgut that remains for eighteen days is again used. My patients, as a rule, are allowed to get out of bed on the seventeenth day after laparotomy, and they never wear supporters in the idea of preventing hernia. If my patients find comfort in wearing any sort of bandage for general support, they are allowed to wear what they please.

After operations for the removal of the vermiform appendix, I now employ four tiers of sutures, the extra tier of catgut being used for the superficial fascia, which is an extremely important structure at the site of this operation. I do not propose to have any of the herniæ that are now being reported as common after appendix operations, and none of the patients are to wear "hernia preventing" supporters after they are out of bed either.

Wounds with Dynamite.—The action of dynamite seems to be almost as chaotic as that of lightning, to judge from an occurrence related in *La Science Moderne*, an abstract of which is given in a recent number of *L'Union Médicale*. A nickel-miner was fishing with dynamite cartridges, when one of them exploded as he was in the act of casting it, and carried away one of his hands. During the twelve hours that it took to convey him to a hospital ship, under a tropical sun, gangrene set in, and he died shortly after reaching his refuge. His body was riddled with communicating subcutaneous channels, and at the post-mortem examination it was found that the nails of the lost hand, having been detached, had acted as projectiles, and were found near the spinal column in the thoracic region.—*New York Medical Journal.*

MY OPERATIVE EXPERIENCE IN "PUS CASES."

BY I. S. STONE, M.D.,
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The following brief recital of a personal experience includes only cases selected from those occurring in my service at Columbia Hospital during the past year. In that time twenty-five cases have been referred to me for operation in which pus in varying amounts was found in the pelvis or abdomen. It will be therefore understood that this is not an account of my "year's work in gynecology," for I shall not mention other surgery for the present. Of these twenty-five cases three have died. But if I add to these the remainder of my pelvic cases I would have nearly fifty without added mortality. I shall limit myself to the consideration of these pus cases alone and shall not mention oöphorectomy, ovariotomy or any other surgery. The organic law of the Columbia Hospital demands that all cases requiring a laparotomy shall be submitted to a consultation of the visiting staff, composed of four surgeons, two of whom are obstetricians and two are gynecologists. It may therefore be taken for granted that only severe cases are treated surgically and unnecessary operations are not performed.

In all of my cases a cause was clearly found for the pathological condition. In about two thirds of the cases, sepsis following abortion or delivery at term, proved the cause. The remainder were due to gonorrhœa. In all of my post puerperal cases the acute stage had passed, and it is impossible to say just how many were due to infection by gonorrhœa, or to that from other sources. One of my cases of post puerperal infection followed rupture of the uterus after labor or during the after treatment. Five cases were the victims of puerperal septicæmia continuing for four, five, and in one case eight months, following delivery at term. These women looked like victims of phthisis, or malignant disease. Six cases had pelvic abscesses of all sizes to a quart of pus following upon gonorrhœa for from one to twelve or more months.

One of the most interesting cases was the result of specific infection of a bicornate uterus.

Clinical History.—The account given by the patient of her suffering, is generally sufficient to indicate suppuration within the pelvis. They tell of pain, peritonitis, rigors and sweats, and slow getting up after delivery. These symptoms demand that a careful pelvic examination be made which will always clear up the diagnosis. Strange enough it is, yet true, that quite a large proportion of these patients claim that they were treated for neuralgia, malaria, etc., and that no pelvic examination had been made by the attending physician.

Of all symptoms pain is the most indefinite. It is always present in varying amount, but is never a positive indication of the extent of disease. Many neurotic patients have far greater tenderness in the ovarian region, and complain more of pain than is elicited in the examination of a pelvic abscess. Neither is the temperature an indication of the extent of disease. We may see a temperature of 100° in morning and 102° in afternoon in a patient with pelvic abscess containing a pint of pus, and with extensive bowel adhesions. Per contra, a small pyosalpinx may cause a rise to 104° P.M. Some of my cases of pyosalpinx with adhesion had no rise of temperature. But we must never underestimate the important information given by the thermometer, for continued high temperature in these cases means trouble ahead for both patient and operator.

The pulse will furnish much information.

A pulse of 140 or above with a continued high temperature means an ill patient. It means a difficult and dangerous surgical operation where all the resources of the well appointed hospital, and the best surgical skill may be required to meet the many possibilities of such surgery as is necessary to save life. The information gained by the pelvic examination of these patients is final and most satisfactory as a rule. My plan is first to examine without, and afterward with, an anæsthetic. Rarely it is important to learn more than to be sure that pus is, or is not, present—or rather, is an operation demanded or not? I fail to see any benefit to be derived from nice distinctions about diagnosis. Such refinements are absurd to the practical surgeon. The preparation of the patient includes tonics, laxatives and good food, cleanliness, cheerful surroundings. I prefer always to give quinine at once after admission, to watch its effect upon the temperature. Not infrequently a rise of temperature during convalescence after operation is promptly reduced by the administration of quinine, showing a malarial complication. So much has been said about expedition, and everything else a surgeon must have in mind during an operation, that I shall not refer to this part of my method or opinions. Each one has an individuality peculiar to himself and cannot be a surgeon without this *sine qua non*. Drainage is just as important as it ever was in many cases, but the glass tube reaches a limited area and I am finding great comfort and satisfaction in the use of the gauze drain. It has done good service in every case, and it is scarcely necessary to say that it is used in very severe cases.

Hæmorrhage has never been difficult to control. Every important vessel can be brought into view by means of the Trendelenburg posture, which I find very useful. Flushing the abdominal cavity is also just as beneficial as Joseph Price claims it to be. I find myself occasionally doing without it, since I use the Trendelenburg posture for difficult cases. I quite agree with those who claim that it rarely if ever does harm. It is also occasionally necessary to use aristol as suggested by Dr. Robert T. Morris of New York. After separating formidable adhesions it is very desirable to prevent the reforming of these dangerous impediments to the peristaltic action of the intestines. Aristol may be freely sifted over these surfaces without fear of harmful result. In the after-treatment my method is to sustain all the cases of laparotomy for pelvic abscess by giving food and stimulants by rectum at once, and by the mouth just as soon as they can be borne. Patients must not be allowed to remain the usual *twenty-four hours without nourishment.*

In the treatment of nausea, if persistent, I resort to lavage in any case. It is the most potent agent for good I have ever seen tried. Of course the usual sip of hot water, and even creasote may be tried, but when these fail it seems unkind to try every drug with a reputation as a composer of sick stomachs. A clean stomach is often in my experience the forerunner of an appetite. With soap and water for the hands, clean dressings, instruments, sutures, etc., all suppuration can generally be avoided in the abdominal wound. Chemical antiseptics, I do not find essential. The only use these agents have in my laparotomies,is where the hands of assistant or operator need to be quickly cleansed during an operation, and where the usual time and care cannot be given them. Clean boiled water is used without any chemical whatever. Suppuration may generally be avoided in all cases where the abdominal wound is not infected by pus or serum removed. The greatest care bestowed upon hands, and instruments, will not prevent infection of the wound, if fetid pus from a suppurating dermoid cyst, or even that from certain pelvic abscesses, comes in contact with it. It has never been my misfortune to have a ventral hernia follow a laparotomy. All operations done for pelvic abscess or pyosalpinx have been completed. In one or two cases very small ovaries were not found even after careful search. They were, if present, too small to have any pus in them. No exploratory operation for pus has been undertaken by me.

The following case is reported to show how fatal an attack of gonorrhœa may prove.

Case 15.—Mrs.—— had contracted gonorrhœa from her husband and came to my office for treatment. She was at once sent to the hospital where in a short time the vaginitis was cured. But in two weeks she had cystitis, then nephritis. An ovarian abscess on left side holding a pint of pus rapidly formed. Operation was refused at first and was only done as a last resort. Patient did well for three days, then came suppression of urine, uræmia and death on fifth day. The autopsy showed a perfect condition of the pedicles and peritoneum. No peritonitis. Death due to nephritis in less than five weeks after infection from gonorrhœa.

The next case, also fatal, is cited to show how easily some patients succumb to shock. Also how sepsis following abortion may continue indefinitely and not recover.

Case 26.—Miss——, age 19, had an induced abortion one year previous to her admission to the hospital. History of pain in pelvis, gonorrhœa, inflammation of bowels, purulent vaginal discharge, large mass in right and smaller one in left ovarian region; uterus fixed and low down in the pelvis. Operation difficult, and bowel much injured in one place but returned hoping for good results. Patient did badly from the start. Bowels refused to respond to salines. Distension. Again resorted to irrigation. Pulse did not recover its tone. Death on third day. I am unable to say why this patient could not stand the shock of operation. She had the very best care during the after treatment.

The next case (No. 18), I report to show that a perfectly satisfactory operation may fail of its object, partly owing to lack of care in after treatment.

Mrs.—— had puerperal septicæmia followed in—— by a large pelvic abscess extending to umbilicus at time of section. High temperature to 104. Pulse 130. Everything fixed in pelvis and lower abdomen. During the two weeks She remained in the hospital prior to operation she grew steadily worse and a bad result was not altogether surprising. The difficulty of the undertaking can only be known to those who have wrestled with these formidable cases. The operation required about an hour,and very much pus escaped and was washed out of the cavity. Although the operation was well done, as shown at autopsy, she had severe shock, and in absence of nurse for a few moments from the room the night after the operation, arose from her bed with the glass drainage tube in position. I consider this case a sacrifice to the unfortunate theory of some of our leading surgeons who say starve these cases for 24 hours. This patient needed food and stimulants from the start which she did not get until too late.

The next case (No. 17), in many respects like the last, only following gonorrhœa instead of puerperal septicæmia.

A woman, age—— and married, had symptoms of pelvic abscess for—— before admission to the hospital. After admission her condition grew rapidly worse and a tumor now reaching nearly to the umbilicus was of uncertain character. Her temperature and pulse gave positive evidence of the severity of the disease and of the necessity for operative treatment. I pause here to remark that to have aspirated any of these cases through the vagina, would have reached only a small area of the disease, and would have evacuated very little of the accumulated pus. In opening the abdominal cavity the omentum was, as is so often the case, adherent to everything in its reach. It was difficult to find an opening or crevice anywhere to even begin the work of separation and enucleation. Many visitors present, among others the hospital staff and Professor Lovejoy of the Georgetown Medical College, were invited to inspect the tumor after the abdomen was well opened and omentum removed,but without any definite conclusion. It is well to be frank, and hence I cheerfully admit that I was unable to say with my hands upon the mass just what was within. The separation proceeding,however, soon revealed abundant pus, which gushed out freely, and although the operation was difficult, was well done, and after much anxiety for a few days she made a perfect recovery. The temperature and pulse chart of this case is very interesting. Both were high before section, and very gradually recovered afterwards. A striking feature of these pelvic abscesses is the very small amount of debris found and removed. The remains of this woman's tubes and ovaries give no conception of the kind of surgery required to complete the operation.

The separation of adhesions in this case was done without tearing the bowel, and the abdominal wound healed nicely and without suppuration.

Septic Disease in Uterus Bicornus.—Another interesting case, No. 22, occurred in a young negress following gonorrhœa. When first admitted she appeared to have a fibroid tumor reaching the umbilicus, with suppurating tubes and ovaries. High temperature, quick pulse and other signs of pelvic disease present. The case was considered by the visiting staff so undesirable a subject for operation, that she was allowed to remain for several weeks under observation, during which time she gained somewhat, and a favorable time was selected after her condition had improved. The operation was nearly completed before the discovery was made that I had really removed the tube, ovary and a portion of the bicornate uterus. This was not extremely difficult save for the broad pedicle, which was very deep down in the pelvis, and so closely attached to the uterus as to cause some delay. When the left side was undertaken the real nature of the case was understood, and fortunately no serious disease existed, and operation was not required upon that side. The sac contained very thick and peculiar, ill-smelling pus. Recovery uneventful save for a slight dementia which continued a few days only, and was of the happy or ecstatic variety. She proved quite entertaining to her nurse, and discoursed tuneful melodies without number. Another interesting case recently treated deserves mention. Had septic metritis, high temperature, etc. A month or six weeks previously had child at term, followed by septicæmia. A mass in right ovarian region supposed to be Fallopian tube. Temperature 102°, pulse 120. Patient and consultant refused to assent to an operation until several weeks had passed, during which time she steadily grew worse. Operation difficult from the start. Omentum glued to everything, and dipping down over right appendages, was inserted in the wall of the uterus just above the attachment of the bladder. When scooped out, a large opening was found into the uterine cavity, through which the index finger was freely passed. Infection had entered the pelvis and abdomen through this channel. The intestines were badly torn in separating adhesions, requiring many sutures before they could be returned. I was anxious about the patient until her bowels acted, for fear that I had closed the bowels too tightly. Her convalescence was uninterrupted after her bowels acted, fifty-two hours after section. I should have remarked that I packed this patient's pelvis with gauze, and dusted aristol over intestines where previously adherent. Gauze was used all around the uterus, for fear of infection through the uterine wound, as it could not be entirely closed with sutures, owing to the friable nature of the tissues. Still more gauze was passed down in the vicinity of the right broad ligament, where the intestines had been very adherent. The glass drain discharged but little fluid, while the gauze poured out an abundance.

These formidable cases are fortunately, as a rule, safe for full and complete recovery, after the danger incident to the operation has passed. Thus far, I have more satisfaction with this surgery than any other. It is always best to complete the work well, when once undertaken. Otherwise the old method of puncture through the vagina will be again heard from. In this connection I wish to say that I have seen at least four cases where puncture through vagina reached pus in the broad ligament, and was followed by an apparent cure. But if any practitioner will witness one of these sections, and see how perfectly thin and healthy the broad ligament remains after all adhesions and disease have been removed, he must indeed be hard to convince if he still believes in the old theory of "cellulitis" as explaining these pelvic masses.

Finally, and in conclusion, I must refer to the minor cases which have been operated upon, and which are abroad in the land by scores, without recognition. One case, No. 20. W. had been married sixteen years; one conception; pelvic disease ever since. Pain, retroflexion, sterility. Treated for months at a time by various physicians. Finally, after nearly two months more of treatment under my own supervision without result, section. Two large pus tubes like sausages. No trouble whatever in convalescence.

Another patient (Case 12), unmarried, had gonorrhœa some months before admission to hospital. Vaginitis treated. Pain in both ovarian regions, rapidly growing worse. Section. Plenty of pus in ovaries and tubes. Perfect recovery.

Another (Case 34) contracted gonorrhœa from husband. In four weeks pyosalpingitis of right side, involving intestine. At time of section free pus poured out of left tube. Fimbria of right tube implanted upon intestine like a placenta; ovarian and tubal abscess. Bowel gave much anxiety, as it was badly necrosed. Gauze packing and drainage after flushing. Perfect recovery. The length of this article forbids further mention of these very interesting cases.

THE PATHOLOGY OF INTESTINAL OBSTRUCTIONS FOLLOWING ABDOMINAL AND PELVIC OPERATIONS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 7, 1892.

BY WILLIAM EASTERLY ASHTON, M.D.,
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Notwithstanding the brilliant results which have been attained in modern abdominal and pelvic surgery there is still much to learn and to improve upon in our operative technique before some of the distressing after results of these operations are prevented or at least rendered less frequent. Among the most important of these post-operative complications I would include intestinal obstructions.

An enormous amount of literature has been written upon acute intestinal obstruction as a surgical disease and the subject is, very properly, receiving the attention it deserves in our medical societies, but, as yet, little has been done toward solving the problems suggested by bowel obstructions following abdominal and pelvic operations. It is, therefore, my purpose in this paper, which I have the honor of presenting before this Association, to enter into the pathology of these obstructions and to discuss such views of the subject as my own experience and that of other surgeons may suggest.

In discussing the pathology of bowel obstructions following intra-peritoneal operations I shall limit myself strictly to those causes dependent upon operative interference and not refer to the causes of acute obstruction from the standpoint of a surgical disease.

I shall classify the causes of post-operative obstructions as follows:

1. Adhesions between the intestine and raw surfaces.
   a. To an omental stump.
   b. To denudations of the pelvic and parietal peritoneum.
   c. To the edges of the vaginal wound following a supra-pubic or a vaginal hysterectomy.
   d. To a pedicle.
   e. To raw surfaces on the intestinal wall.
2. Paralysis of the intestines.
3. Local spasm of the intestines.
4. Impacted fæces
5. Bands of inflammatory lymph.
6. Adhesions between coils of intestine or between the gut and neighboring parts due to a traumatic inflammation.
7. Kinking or twisting of the intestine due to a faulty technique.
8. Including the intestine within the loop of an abdominal wall suture, or between the edges of the belly incision.
9. Slipping of a coil of intestine through a slit or an aperture.

Adhesions Between the Intestine and Raw Surfaces.—By far the greater number of bowel obstructions are due to this cause. A knuckle of gut becomes attached by an adhesive inflammation to a denuded surface and a kink results and an obstruction of the bowel follows. Naturally the question will be asked, how do we explain the fact that so few cases of obstruction occur from this cause when there are so many bad pelvic cases requiring the separation of extensive adhesions? My answer is, that kinking does not necessarily follow the fixation of a knuckle of intestine unless the gut adheres in an abnormal position. In other words, if the normal position of a coil of intestine is near the position of the denuded surface to which it adheres obstruction will not as a rule follow. Furthermore, I believe that many of the cases which die after abdominal and pelvic operations, and the cause of death is ascribed to peritonitis, are in reality undiagnosed bowel obstructions.

The following cases present points of great interest in connection with this class of obstructions.

Case 1.—Reported by Meredith.[1] Section for double cystoma with extensive adhesions. *Secondary Section*, eighth day. The peritoneum was intensely red and congested, evidently in the first stage of acute inflammation. "Attention was attracted to a coil of greatly distended small intestine which was badly kinked and obstructed in consequence of the traction exerted upon it by a portion of the ligated omentum which was closely adherent to its surface." There was no other obstruction. The patient recovered.

Case 2.—Reported by Krug.[2] Section for double pyosalpinx and ovarian abscesses. Adhesions especially extensive behind uterus. Irrigation and drainage. *Secondary Section.* Fourth day. Signs of beginning peritonitis. A portion of the descending colon was found glued fast as an angular loop to the posterior surface of the uterus. The patient recovered.

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[1] London Lancet, 1886, p. 64.

[2] Amer. Jour. of Obstet., 1890, xxiii, 1371.

Case 3.—Reported by Ahern.[3] Section for large cyst of right ovary. Adhesions to brim of pelvis on left side and to sigmoid flexure. Raw surfaces two in number, and ½ of an inch in diameter each. No drainage. *Secondary Section.* Ninth day. Upper part of small intestines congested and distended. Adherent to pedicle and to both denuded surfaces. Below the adhesion the bowel was contracted. The coil of intestine at point of adhesion formed an acute angle. The patient recovered.

Case 4.—Reported by Anderson.[4] Section for ovarian cystoma. Adherent to parietal peritoneum just above the position of the cæcum. *Secondary Section.* Twentieth day. Coil of small intestine adherent to raw surface just above the position of the cæcum. Below the adhesion the gut was collapsed, above distended. The patient recovered.

Case 5.—Reported by Coe.[5] Vaginal hysterectomy. Uterus retroflexed and adherent. Ovarian cyst right side punctured and removed. No ligatures. Two forceps to each broad ligament, and two pairs to bleeding points in utero-sacral folds. Peritoneal wound left open. Tampon iodoform gauze. *Section.* Fifth day. A loop of small intestine adherent to the right edge of vaginal wound. No peritonitis. The gut was distended above the adhesion and contracted below. The patient died next morning from shock.

The following cases of "ileus after vaginal extirpation of the uterus," quoted by Coe from a paper by Reichel[6] are of great interest.

Case 1.—Section. Seventh day. The lower part of the ileum was attached to the edge of the vaginal wound. Gut above distended. No peritonitis. Patient died on the table.

Case 2.—(Olhausen.) *Section.* Ninth day. A coil of ileum adherent to edge of vaginal wound. The gut was bent at an angle. Died in 24 hours. *Post mortem.* Diffuse peritonitis. *Two other coils found attached to edge of vaginal wound.*

Case 3.—Collapsed and died on the eighth day. *Post mortem.* Coils of intestine adherent to edge of vaginal wound, the gut above greatly distended. The large intestine contained fecal matter, therefore, the obstruction was *not* complete. No general peritonitis.

The four following cases of obstruction consequent upon vaginal hysterectomy are also quoted by Coe.

Case 1.—Bakelmann's patient.[7] Died on seventh day. *Post mortem.* Lowest part of ilium adherent to edge of vaginal wound. Gut distended and bent at an angle.

Case 2—Leopold's patient.[8] Death on fourth day. *Post mortem.* Two coils of intestine adherent to edge of vaginal wound. The gut bent at an angle.

Case 3.—Landau.[9] *Section*. Seventh day. Adherent gut to edge of vaginal wound. Died next day.

Case 4.—Coe's patient.[10] *Section.* Second day. Two or three coils of illim adherent to edge of vaginal wound. Gas escaped per anum after they were detached. No peritonitis. Death in four hours.

These cases illustrate in a forcible manner the explanation and dangers of obstructions due to raw surfaces. In every one of the abdominal sections the obstruction occurred at a point where adhesions were separated at the time of operation. Again, in every instance, the intestines were fixed in an abnormal position and at the point of fixation formed a more or less acute angle. In the case reported by Krug where he found the descending colon "adherent as an angular loop to the posterior surface of the uterus" we have an instructive illustration of these points. The cases quoted of obstruction following vaginal hysterectomy, also demonstrate clearly the cause of bowel fixation and kinking dependent upon an adhesive attachment of the intestine to a raw surface.

The practical operative lesson all of these cases teach us is, that when we perform a secondary section for their relief we know where to look for the seat of obstruction if we have kept in mind the position of denuded surfaces made at the time of the original operation.

Paralysis and Local Spasm of the Intestine; Impacted Fæces.—As the pathology of all of these causes of obstruction is the same, I shall discuss them under one heading. First, however, I shall cite some cases illustrating this class of intestinal blocking.

Case 1.—This case occurred in my own practice. Section for double pyosalpinx with slight adhesions. Irrigation, but *no drainage. Death on fifth day. Post mortem.* The small intestine, for a distance of 8 inches from the ileo-cæcal valve, was *tightly* contracted, causing an absolute obstruction. Above the contraction the gut was greatly distended. At the seat of *constriction* the bowel was red and congested, but *no lymph* was found. The *abdominal cavity* was dry. *There were no adhesions.*

Case 2.—Reported by Baldy.[11] Supra-pubic hysterectomy; extra-peritoneal treatment of the stump. *Secondary section.* Sixth day. *Intestinal evacuation* and drainage. Death in twenty-four hours. *Post mortem.* Intestines free, "but in one or two places had contracted so as to feel like hard cords."

Case 3.—Reported by Baldy.[12] Section for double pyosalpinx. Inflammation of some of the pelvic loops of intestine. *Secondary section.* Fourth day. Bowels enormously distended. Intestinal evacuation and drainage; death in twelve hours. *Post mortem.* "There was nothing abnormal found excepting the peritonitis affecting the coils of intestine *in the pelvis. There was a slight adhesion of these* coils to one another."

Case 4.—Occurring in my own practice. Section for chronic inflammation of the appendages. Dense pelvic adhesions. *Secondary section.* Twentieth day. Small *intestines* somewhat distended; *no evidence of peritonitis or pus.* The descending colon was tightly packed with hard fæces from the splenic to the sigmoid flexures. Bands of lymph constricting slightly the bowel near the sigmoid. The patient recovered.

The true explanation of obstructions due to local spasm or paresis of the bowel will, most probably, be found in a study of the influence of various stimuli upon the nerves controlling intestinal peristalsis. The intestinal walls contain an automatic motor centre—the plexus of Auerbach—which influences the peristaltic action of the bowel. "If this centre is not affected by any stimulus, the movements of the intestines cease—comparable to the condition of the medulla oblongata in apnœa. The same is true —just as in the case of the respiration—during intrauterine life, in consequence of the fœtal blood being well supplied with O. This condition may be termed aperistalsis. It also occurs during sleep, perhaps on account of the greater amount of O in the blood during that state. All stimuli applied to the plexus myentericus increase the peristalsis, which may become so very violent as to cause evacuation of the contents of the large gut, and may even produce spasmodic contraction of the musculature of the intestine. This condition may be termed dysperistalsis, corresponding to dyspnœa. The condition of the blood flowing through the intestinal vessels has a most important effect on peristaltic movements. The continued application of strong stimuli causes dysperistalsis to give place to rest, owing to over-stimulation, which may be called intestinal paresis or exhaustion."[13]

With these facts before us concerning the effects of the absence or the presence of stimulation upon intestinal peristalsis we are able, most probably, to explain the pathology of these obstructions. For the first twenty-four or forty-eight hours after an abdominal section the intestines are in a condition of aperistalsis if the case be doing well. There are several factors concerned in bringing about this state. In the first place, the preparatory treatment of the bowels with salines, the liquid diet and the absence of food after section leave the intestines comparatively empty, thus removing the intestinal contents as a factor in stimulating peristalsis. Again, the rest in bed for two or three days before an operation, and the enforced quiet afterwards, add largely to the absence of intestinal activity. This condition is not only observed immediately after an abdominal section, but also after parturition or, in fact, in all cases in which the patient is required to lie quietly in bed for some time. The well known fact that changing the position of the patient in bed relieves tympany in some cases, and favors the downward movement of gas, shows the effect of exercise upon intestinal peristalsis.

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[3] Amer. Jour. of Obstet., 1891, xxiv,326.
[4] London Lancet, 1889. 11, 894.
[5] Amer. Jour. of Obstet., 1890, xxiii, 114.
[6] Zeitschrift fur Geb. u Gyn., Band xv. Heft 1.
[7] Archiv. fur Gyn., Band xxv, Heft 1.
[8] Archiv. fur Gyn., Band xxx, Heft 3.
[9] Berliner Klin. Wochenschrift, 1888, No. 10.
[10] Amer. Jour. of Obstet., 1890, xxiii, 469.
[11] Journal of Gynecology, August, 1891.
[12] Journal of Gynecology, August, 1891.
[13] Landois, second Amer. edit., p. 263.

The causes of operative stimulation of the intestines are: exposure to the air, lowering of the temperature, bruising, healing of denudations, peritonitis, operative procedures, irritating fluids, septic materials, and a neglect to thoroughly empty the bowels prior to operation.

We have found that dysperistalsis and paresis depend upon the same cause, namely: an irritation of the motor centres of the intestine, but that the intensity and duration of the abnormal stimulation alone determines the difference between the two conditions. For example, a simple congestion of the intestinal blood-vessels would most probably, even if long continued, result in a condition of dysperistalsis, while a severe inflammation, on the other hand, would cause a state of paresis.

In cases Nos. 1 and 2 there was a condition of intestinal dysperistalsis present, causing the obstruction. In both cases, at the beginning, this condition alone existed, but subsequently paresis of the gut above the constriction occurred, due to the continued effort made by the intestine to push its contents beyond the obstruction. The increased amount of gas and fluid in the bowel also aided in producing exhaustion, as they were necessarily a source of continued irritation. In case No. 1 the intestinal spasm was probably the result of the congestion, which was practically limited to the seat of constriction in the bowel. The cause of this congestion is difficult to determine. Possibly it may have been due to the irritation produced upon the intestine by the pus which escaped when the tubes were delivered, or the bowel may have been bruised during the operation, and a traumatic peritonitis was developing at the time of death. In case No. 2 the notes of the post-mortem examination were too superficial to be of any value in determining the cause of the nodulated condition of the intestines. Case No. 3 was clearly one of intestinal paresis due to peritonitis. The adhesions which were found between coils of the intestine after death were evidence that the peritonitis, which had existed at the time of the operation, had continued.

Case No. 4 is of especial interest. The patient had a bowel movement in forty-eight hours, and everything was doing well until she fell out of bed in her sleep on the third day. Now what had happened to bring about an obstruction due to fæcal impaction after this accident? I believe that the fall caused a traumatic peritonitis which resulted in paresis of the colon, and while the bowel was in this condition fæcal accumulations occurred. After the intestine had regained its normal activity, it was then unable to empty itself on account of the great amount of fæcal matter which had collected. In addition to this want of power in the gut, there was also more or less constriction, from bands of lymph, at the sigmoid flexure, which rendered the downward passage of the fæces difficult.

Bands of Inflammatory Lymph.—As the result of intraperitoneal inflammation following abdominal and pelvic operation, lymph is poured out upon the intestines, and coils of the gut become more or less adherent to each other. As a rule, no bad results ensue, but if the adhesions destroy the normal relations existing between the coils, or a knuckle of gut is constricted by a band of lymph, then kinking or strangulation follows. These obstructions do not manifest themselves early after operation, because no serious interference to the movements of intestinal fluids occurs, usually, until the bands of lymph begin to organize and to contract. Montgomery[14] reports an interesting case of volvulus caused by bands of inflammatory lymph. Five weeks after the original operation, for peritonitis, symptoms of obstruction came on, associated with fæcal vomiting. "The intestines were found matted together, so that over a yard of small intestine had to be forcibly liberated from extensive adhesions. The muscular coat was torn through at a number of points; a distinct twist was found in the small intestine, which was readily overcome by separating the bands of adhesions." The patient made a good recovery.

Adhesions between Coils of Intestine or between the Gut and Neighboring Parts, due to Traumatic Inflammation.—These adhesions have always been a subject of great interest to me. They result from an irritation of the serous membranes caused by the exposure of the intestines to the air, to lowering of their temperature, to handling or to necessary manipulations or operative procedures. This class of adhesions is, in my experience, a necessary sequence to all intraperitoneal operations. In fact they are, I might say, the opprobrium of abdominal surgery, for it must be indeed rare to have an abdominal operation not followed by more or less fixation of the viscera. In my experimental work upon the lower animals this fact has time and again forced itself upon me. For example, I have taken a perfectly healthy dog and performed upon the animal a lateral anastomosis without resection. At the time of operation not more than 10 inches of the bowel were exposed through an incision in the belly wall less than 2 inches in length, and every precaution was taken in the operative technique. Yet notwithstanding these facts, when the animal was killed in three weeks, after making an uninterrupted recovery, the intestines were so matted together that it was with the greatest difficulty I was able to separate the seat of anastomosis from the adherent coils of gut. This has been my experience, without an exception, in all my work upon the lower animals. I have seen numerous illustrations of these traumatic adhesions in the human subject revealed during a secondary section or a post-mortem examination. At an autopsy recently held at the Philadelphia Hospital upon a woman who had died three weeks after a supra-vaginal hysterectomy from disease of the kidneys, the intestines were found to be extensively matted together. The hysterectomy was a very simple operation, without adhesions; the abdominal incision was small and there was no exposure of the intestines, and yet, after death, extensive fixations of the gut were found. It is a very common experience, in performing a secondary section, to find the gut or the omentum adherent to the parietal peritoneum at the site of the original abdominal incision. This fact is so well recognized that great care is always taken in reopening the abdomen to cut to one or the other side of the cicatrix, in order to avoid the danger of wounding a knuckle of adherent gut. Fortunately traumatic adhesions, as a rule, are not followed by fatal results, as they do not cause kinking or twisting of the gut. They do, however, not infrequently cause remote troubles by giving rise to colicky pains and more or less tendency to constipation.

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[14] Philadelphia Hospital Reports, Vol. i, 1890.

Kinking or twisting of the Intestine due to a Faulty Operative Technique.—These obstructions are not the result of adhesions, but occur after anastomotic operations upon the alimentary canal, or after the repair of bowel lesions. For example, a coil of intestine may be kinked or twisted by placing it in an abnormal position in making an anastomosis. Or, again, the bowel may be torn transversely while separating adhesions during an operation, and, if the opening be large, suturing the tear may result in a fatal obstruction from kinking. Tears in the wall of the bowel which are longitudinal to its long axis may be safely closed with sutures, even if it is extensive, but a large transverse opening into the gut will almost certainly cause a kink if sutured.

Including the intestine within the loop of an abdominal wall suture or between the edges of the belly incision.—At first sight these causes of bowel obstruction may appear to the surgeon as being extremely unlikely, or at least very rare. Yet, if we will recall to mind our own operations, as well as those of other surgeons, I think all of us will be struck by the fact that such an accident is liable to occur when the abdominal incision is closed. There is but little danger, I admit, of including a loop of intestine when the belly wall sutures are introduced, as the abdominal contents are protected by a gauze pad or a flat sponge, but it is when they are tied that the accident is likely to occur. After the pad or the sponge has been removed the intestines come in direct contact with the loops of the sutures and press up, more or less, between the edges of the abdominal wound. Naturally, therefore, it is next to impossible for the surgeon to know positively that [illegible] instance, the intestine [illegible] a portion of the gut has not been caught when the sutures are tied. Of course, if the gut has been fastened to the abdominal incision no immediate result will necessarily follow unless the lumen of the intestine has been obliterated, leakage occurs or kinking takes place. Consequently, we are not aware, in the majority of instances, that such an accident has occurred. Or, again, if the accident be followed by a fatal result, its true nature cannot be determined except by an autopsy.

Shively[15] reports an extremely interesting case in which death occurred five or six years after an ovariotomy from a bowel obstruction, which was the remote result of the fixation of the intestine to the abdominal incision. After the original operation the patient was always "greatly troubled with constipation and frequent attacks of colic." She was obliged to use strong cathartic pills to keep her bowels open. On August 8, 1883, she was taken ill. "She said she was ill with an attack of colic," August 11. Fecal vomiting. Death.

Post mortem.—"At the lower end of the line of the belly cut, a discolored spot, half the size of the hand was seen. The bowel was here adherent. There were also extensive adhesions of the intestines to the sides and posterior wall of the abdomen, thus preventing the appearance of tympany. The intestines and cavity nearly everywhere gave evidence of former inflammation. Also a portion of the ilium (18 inches above cæcum) was adherent to and incorporated with the cicatrix corresponding to the lower angle of the original wound, and that around the short portion between this and the cæcum a loop of small intestine was twice twisted, forming a kind of knot and a complete and effectual barrier to the passage of the intestinal contents."

Slipping of a coil of intestine through a slit or aperture.—This accident may occur from the following causes: 1. The result of adhesions. For example, a band of inflammatory lymph may be so attached that an aperture is formed. Or, again, a coil of the intestine or the mesentery may adhere and form a loop through which a knuckle of gut may slip. I saw an autopsy upon a patient who had died after an abdominal section, where the omentum was found adherent to the parietal peritoneum by two distinct attachments, thus forming an opening through which the intestine might readily have passed. An instructive point in this case lies in the fact that the adhesions were caused by two omental stumps which were left after the omentum had been ligated for adhesions at the operation. Larkins[16] reports a case in which death resulted from an obstruction following a jejunostomy. The original operation was performed for a cancer of the stomach, but in less than three months afterwards he did a jejunostomy on account of obstructive symptoms developing. The patient then did well for about two months when intestinal obstruction again occurred and death resulted.

Post mortem.—"There was a firm adhesion between the jejunum and the incision in the abdominal wall made in performing the gastro-enterostomy. The portion of jejunum taken in the jejunostomy was only two to three inches above this adhesion. The piece of jejunum between these two attachments to the abdominal wall formed a little loop, and between this loop and the parietes the upper segment of the jejunum had slipped. It was firmly nipped. The intestines above were greatly dilated and ruptured just above the seat of constriction; the intestines below were contracted."

2. A faulty method of dealing with tears or incisions through the mesentery. Thus, if the mesentery be torn during the separation of adhesions and the tear is not closed, and its flaps are not well sutured after the resection of the bowel, a coil of intestine is liable to slip into the opening and become nipped. 3. The slipping of a coil of intestine through the vaginal wound after complete removal of the uterus. 4. A knuckle of gut pushing its way through the intestinal loop formed in making a lateral anastomosis without resection. 5. From a fixation of the gall bladder to the abdominal incision. 6. From openings made through the transverse meso-colon and the great omentum to facilitate

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[15] N. Y. Med. Jour., 1884, vol. xl, p. 292.

[16] London Lancet, 1891, ii, 1222.

the attachment of the bowel to the stomach in performing gastro-enterostomy. In a case[17] of cancer of the pylorus in which this was done, the post-mortem examination showed that "almost all of the intestines were in front of the great omentum, having prolapsed through a hole in the transverse meso-colon and great omentum. There had passed all of the jejunum and the ilium to within four inches of the ileo-cæcal valve."

2011 Walnut Street.

SOCIETY PROCEEDINGS.

Gynecological Society of Boston.

Regular Meeting, held June 9, 1892.

The President, Augustus P. Clarke, M.D., in the Chair.

Dr. A. H. Tuttle, of Cambridge, read the following paper on

ANIMAL LIGATURES AND SUTURES, THEIR VARIETY, PREPARATION AND USES.

Surgeons are divided in their opinions upon the relative merits of various sutures. Silk, one of the first materials to be employed, is still the most popular, and many operators employ it almost exclusively. In the large surgical clinics throughout the world it forms the chief material for closing all kinds of wounds. Catgut and animal ligatures are comparatively of recent use, and offer the special advantage of being absorbed by the tissues, which makes it unnecessary to remove them. In all wounds which are aseptic, these sutures may be used, buried deep in the tissues, without piercing the cuticle or appearing upon the surface of the skin, the line of incision closed with collodion dressing or, in certain localities involving mucous surfaces, with the compound tincture of benzoin, containing a little iodoform, and the wound will be entirely healed at the end of five or six days, without evidence of suppuration. Does not this seem to be an ideal method? There are certain cases, however, where this cannot be accomplished, and where the healing in part is attended with suppuration, *i. e.*, recovery by second intention. In such cases imperfect results are liable to follow the employment of animal sutures, since they will be softened, absorbed, and give way before healing is effected. Gaping of the wound will then result, which would have been prevented had a more permanent suture been used. In abdominal operations it is better to use animal sutures entirely, even if pus is present, since it will remain long enough to do all that is required of it, and it is less liable to become a foreign body, with subsequent sinus formations, and slow cure. In earlier times, before the ideas of sepsis, asepsis and antisepsis had taken material form, silk and other sutures were used without any special preparation, and as might be supposed, primary healing in certain localities never took place. No better example of this can be given than the work of [1]Marion Sims upon vesico-vaginal fistulæ. It will be remembered that Sims operated a great number of times, and in fact had perfected his operation, without realizing its success, and it was only after he changed the material of his suture from silk to silver wire, that he succeeded in completely closing the fistulous opening between the vagina and bladder. To Sims, it seemed as though the substance of the suture brought up the balance in favor of success, but viewing the facts through the spectacles of to-day, we can see still farther, and realize that it was not the mere material from which the suture was constructed, but upon its aseptic preparation, that his success was won. It is a simple matter to make a suture of fine silver wire, free from irritating properties, and such measure of cleanliness as most surgeons used in those days, would render a suture of this kind practically aseptic. With silk, however, it is quite a different thing, and although it is easily sterilized by special measures, such as boiling, it would rarely be found free from irritating properties in the condition in which it was employed by the older surgeons. Experience has taught us the truth of these statements, for to-day, by simply sterilizing our suture, we can complete the operation for vesico-vaginal fistula without regard to the substance of which it is made. The aseptic condition of the suture is of the utmost importance, and if this condition is maintained, the suture, no matter what it be made of, may be placed almost anywhere without causing a great amount of irritation. If buried in tissue, most sutures, metallic ones excepted, will become absorbed, although it may take a long time, according to the material from which they are made. Firm union of parts should never take over ten days, when the union is by primary intention, therefore any substance which is used for a buried suture should be well under the process of absorption by that time, otherwise it will be in the way, and may retard the normal changes of repair. The animal ligature fulfils this requirement as nothing else will. It is owing to this fact that its growing importance depends. From a few, perhaps bold operators who used it at the beginning, there has been a steady increase in number, until now the larger part of the practicing surgeons of our country, and abroad, have come to recognize its value, and employ it. A great deal of opposition has checked its use, because it can only be made aseptic by a most careful preparation, and much of the material delivered from the instrument maker brought sepsis into the wound; furthermore, it may be absorbed too rapidly, and result in secondary hæmorrhage.

[2]Dr. Sims, of New York, objected to its use in operations upon the cervix uteri on the latter account. [3]Dr. J. C. Warren has said, "I would not rest easy if I had tied an ovarian pedicle with catgut until the danger of secondary hæmorrhage was passed." A study of the various methods of preparing catgut, employed by many prominent surgeons throughout the world is sufficient to demonstrate that the great consideration is its aseptic condition, and but little stress is placed upon its being absorbed too rapidly. This then, is really a great gain in favor of the use of animal ligature, since, a priori, its too rapid absorption was the strongest argument against the use of this material. If it would not resist absorption long enough for the wound to be united firmly and long enough for a good strong clot to organize in the larger blood vessels, sufficient to protect against secondary hæmorrhage, it would not fulfil the requirements of a suture, or ligature, and must sooner or later for this purpose become obsolete. The fact that surgeons no longer bother themselves with methods to increase the resisting power of the gut, against the absorbing powers of the tissues indicates very strongly that they no longer fear that effect, and in fact practical experience shows that under the proper circumstances we can depend upon animal ligature to hold until the parts are firmly united. Most of the evil consequences come from the use of septic gut.

[4]Klemm claims that abscess formation takes place frequently in wounds closed with aseptic gut, where all aseptic precautions have been taken; the infection arising during the operation, and developing in the culture medium formed from the dead softened material of the ligature. He says: "It is almost impossible to keep a wound germ free," and thus explains the cause of the trouble. His gut was prepared by washing repeatedly in five per cent. alcoholic solutions of sublimate, until there was no turpidity, and then storing it in absolute alcohol. This gut was exposed to culture experiment, and by this means, determined germ free

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[17] Larkin, London Lancet, 1891, 11-1222.

My experience has been, and it is the same as my associates, that if asceptic gut, or animal ligature, is placed in an aseptic wound, which is maintained so, that wound will heal rapidly without suppuration, unless the nutrition of the tissues are modified by senile changes, or some other disturbing influence. [5]Reverdin used gut prepared by heat for eighteen months with perfect results. [6]Timothy Holmes says he has had no bad effects from the use of catgut, and [7]Watson Cheyne has seen little suppuration result from the use of this material. Of the last 600 unselected hospital cases operated upon with kangaroo tendon [8]Marcy had suppuration in only two per cent., with one death from sepsis.

[9]Marsh believes that when gut is properly prepared it will cause no more suppuration than silk. If a selection of cases and circumstances can be made, such as filled the requirements of Klemm's experiment, the wound ought to invariably heal without suppuration. Abscess formation after the use of gut was a common thing, and it was due to the septic condition of the suture, but to-day it is, or ought to be, of exceptional occurrence, and the daily experience of those skilled by its habitual use, where the conditions are the fac simile of those in Klemm's experiments, is quite out of harmony with the results of the latter. In the investigations of [10]H. L. Burrell and G. R. Tucker, they found that catgut prepared by immersion in a 1 to 1000 alcoholic solution of corrosive sublimate, contains germs, and could not be relied upon; their explanation was, the hardening of the gut, prior to complete sterilization, shut up the organisms in the substance of the gut, where they were preserved alive, until set free by the swelling of the suture in the living tissues. This may also be the explanation of Klemm's results, at least his method of preparing the gut is practically the same, and open to the same objection; its insertion in the living tissue should be the practical test of its aseptic condition, and not by bouillion or similar cultures. That the great danger in the use of animal ligature is from' its being septic, the result of imperfect preparation, is proven beyond cavil. Not long ago, a patient died in [11]Volkmann's clinic from anthrax, the infection arising from catgut that had been derived from an animal suffering from that disease.

[12]Marcy has reported where several patients were infected almost simultaneously from the same lot of septic gut. Marsh, and many others have reported cases that show this danger, the avoidance of which, depends upon the careful preparation of the gut. Many writers speak of uncertainty of the material, derived from the instrument makers, and point to the necessity of the surgeon preparing his own sutures. The following are some of the methods employed in the preparation of animal ligatures: Sir Joseph Lister [13] made a solution containing one part chromic acid, and 4000 parts of distilled water to which was added 200 parts of pure carbolic acid. In this solution catgut, equivalent in weight to the carbolic acid is placed, and allowed to remain 48 hours. It is then taken from the solution, dried, and stored in 1 to 5 carbolic oil, when it is fit for use.

[14]Macewen prepares his catgut by immersing it in a watery solution of chromic acid 1-5 and adding one part of this to 20 of glycerine. At the end of two months this is removed, and kept for use in 1-5 carbolic acid and glycerine.

[15]Reverdin takes crude catgut, which has not been preserved in fat, exposes it for four days to a constantly increasing temperature until it reaches a maximum of a 140° C., and then places it for a day in oil of juniper, when *it is* stored in alcohol.

[16]Larochette writes, at 90° C., the small gut is spoiled; at 100° C., the largest gut is spoiled, when fat is present, as it is fried in its own grease. If the fat of catgut is removed by ether and bi-sulphide of carbon, the gut will suffer no change, if gradually heated in a large oven to 100° C. I heated to 145° C., for three hours it becomes slightly burned but is strong enough for surgical purposes. When the gu is freed from fat by the use of ether, and sterilized by hea it becomes almost friable and is worthless. He believes 140 C. is sufficient heat to sterilize the gut; he stores it i boiled olive oil, containing 10 per cent. by weight of car bolic crystals. Catgut sterilized by heat is not quite s strong, and is less pliable.

[17]Bryant places crude catgut in a solution of bichlorid 1–1001 for ten minutes, then into a weaker solution 1–100 for 12 to 14 hours; it is then wound on bobbins, and kept i absolute alcohol.

[18]Kocher places the gut in oil of juniper for 24 hours and stores it for use in absolute alcohol.

[19]Partridge severs the gut into one foot lengths, an places it in ether for 5 days; it is then removed and place in Bergmann's solution, corrosive sublimate 5 grains, water 31½ oz., in alcohol sufficient to make one pint, and kept fo ten days; it is stored for use in a solution of equal part of ether and alcohol, saturated with iodoform.

[20]Clinton Cushing uses the best violin catgut strings which are placed in a large open mouthed bottle filled wit sulphuric ether, and allowed to remain 48 hours; whe removed they are nearly white, as the ether takes out th animal oil; they are then placed in a mixture of three part alcohol, and one part juniper oil, with the addition of thre drachms of hydro-naphthol, to each quart of the fluid; th strings are allowed to remain in this mixture ten days, whe they are ready for use.

[21]G. R. Fowler winds catgut on ordinary spools which hav been boiled in soda, and places them in a jar containing on pint of alcohol for every fifty meters of gut; the jar is the placed in a water bath, or milk sterilizer, and the alcoho boiled for one hour. 95–97 per cent. alcohol is used.

[22]Curtillet sterilizes the catgut by heating for one hal hour in a partially closed glass vessel, at a temperature o 284° F., which is gradually increased to 302° F. It is then placed in absolute alcohol, and ready for use. Thus treated, it will remain for an indefinite time, sterile, strong and pliant.

[23]Mass. General Hospital: The catgut is soaked in ethe several days, and is then placed in an alcoholic solution of corrosive sublimate 1–1000. (95° alcohol.) In some cases it is sometimes boiled in alcohol in a closed jar for half an hour, and then preserved in absolute alcohol.

[24]Boston City Hospital: The catgut is allowed to stand for 24 hours in aniline oil and is then heated while still in this oil to 115° C., for 15 minutes. It is then transferred to a 10 per cent. solution in alcohol until it is soft enough for use, and is transferred to a 3–4 per cent. solution of glycerine in alcohol so as to render it less slippery.

(*To be concluded.*)

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[1] Sims, J. Marion, Life of Marion Sims.

[2] Sims, H., Lectures at the New York Polyclinic.

[3] Warren, J. C., Address before the Camb. Med. Imp. Soc.

[4] Klemm, Archiv. fur Klin. Chirur., Bd. xii, Heft 4.

[5] Reverdin, Rev. Med. de la Suisse Rou., July and August, 1888.

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SATURDAY, JULY 9, 1892.

BY-LAW IV OF THE AMERICAN MEDICAL ASSOCIATION.

The Publication of Papers and Reports.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Board of Trustees shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

THE URINE IN NEURASTHENIA.

In a recent number of the *Post-Graduate*, we find the report of a discussion of the clinical values of urinalysis. In it are given the maturer views of Dr. C. L. Dana on that line of investigation in cases of neurasthenia. He has for many years made the routine examinations for sugar and albumen; but lately he has gone more explicitly into the relations of quantity, density and the amount of the phosphates.

A low specific gravity is found in nearly all cases of affection, and the proportion of the solids and of the urine was rather below the normal. But a dense urine may be found in one class of neurasthenics, namely, those who suffer from the lithæmic form. This latter is generally acquired in consequence of overwork, indigestion and hepatic impairment. Then a dense urine, voided in large quantity, and containing considerable proportions of solids, chiefly urea and uric acid. These have already been pointed out by Dr. Dana and others as signs of the neurasthenic state. The discharge of the alkaline phosphates is governed largely by the diet, but the relation to them of the earthy phosphates is important. The author's studies have taught him that an increased proportion *of the earthy phosphates implies neurotic trouble;* and without seeing the person he has been able safely to indicate that the specimen had been voided by a nervous patient. In that other form of neurasthenia, where the urine was dense, there is less proportion of earthy phosphates, growing less and less as the urinary density is increased. When associated with this dense urine there is a little sugar, the quantity of those phosphates is still farther diminished. If under treatment the sugar disappears, the phosphates will return.

A French writer has reported that after epileptic attacks the quantity of phosphates show little change, but that *after hysteria there is an inversion of the* usual ratio existing between the alkaline and the earthy phosphates. Ordinarily this ratio is as one to two and one half or three, but after an attack of hysteria, it may be as two to two, or as three to two, the earthy phosphates are increased while the alkaline phosphates diminish. Dr. Dana has examined the urine of epileptics and in regard to them has verified the statement of the French observer, but he has not yet formed an opinion as to hysterical changes in the phosphates.

THEATRES AND TUBERCULOSIS.

Mr. Henry Irving recently spoke at a festival dinner of one of the hospitals for consumptives in London. He made merry, says the *Press and Circular*, over a letter, written to him by a medical man, suggesting that if the theatres were kept closed the hospitals for consumptives might be reduced one-half. The idea of the letter-writer was that the systems of ventilation of theatres were so villainously bad, that those who subjected themselves to incident exposures to draughts and sudden changes of temperature took their lives in their hands, when going to these places of amusement. The specific cause of tuberculosis may or may not be *propagable in the* various illy ventilated halls where pleasure seekers gather, but there is enough of old-fashioned truth about the belief that many a case of lung-trouble has taken its rise in the "bad cold" that was caught at the theatre. Possibly a subsequent want of care and treatment, together with some mysterious bacillary implantation *at a time when it could do the utmost* harm, have been necessary to convert these cases of "cold" into phthisis, still there may be a justly chargeable contributory element for the theatre to sustain. The question of properly ventilating a place of public resort has been solved time and again by experts in that department, and it resolves itself down into a question of cost. If the money is freely supplied for the purpose, any given building can be adequately ventilated. just as certainly as it can be rendered safe against fire. But the money cannot commonly be spared for these objects—it is required to be spent upon some tower, or pinnacle, or other architectural embellishment.

THE SECOND ANNUAL MEETING OF THE AMERICAN MEDICAL TEMPERANCE ASSOCIATION.

This is the youngest of the National medical organizations that hold their annual meetings in close connection with those of the American Medical Association. It was organized during the session of the latter Association in Washington, May, 1891, and held its next annual meeting at Detroit, June 9, 1892. At the first meeting fifty-six physicians were enrolled as members, and perhaps as many more have been added since. The objects and plan of the organization are nearly identical with those of the British Medical Temperance Association, which has been in active operation several years and now numbers about six hundred members. The meeting at Detroit was held in the hall of the Young Men's Christian Association on Thursday evening June 9, 1892, and was well attended. The President, Dr. N. S. Davis, of Chicago, delivered an address, in the first few lines of which, he stated explicitly the objects of the Association, and then proceeded to point out the fallacy of classing the carbo-hydrates of fermentation or bacteriological production, as the alcohols, along with the carbo-hydrates of vegetable growth, as starch, sugar, oil, gum, etc., and calling them all indirect or respiratory food. His views of the histological, physiological, and therapeutic relations of alcohol were clearly stated and illustrated by reference to the experimental researches which have been prosecuted both in this country and Europe. But as the address in full may be found in another part of The Journal, each reader can peruse it for himself. Dr. T. D. Crothers of Hartford, Conn., read a brief paper on "Heart Failure from the Medicinal Use of Alcohol, Illustrated by Cases"; and Dr. I. N. Quimby, of Jersey City, N. J., read a paper on "Some Dangers of the Use of Alcohol in Acute Diseases." Some of the cases and facts related in these papers were highly interesting and valuable, and their presentation was followed by an earnest discussion concerning the actual value or non-value of the use of alcohol in both health and disease, in which a large number of those physicians present took an active part, and the interest was sustained until a late hour of the evening. A resolution was adopted recommending the publication of 5,000 copies of the president's address and an abstract of the proceedings of the meeting; several new names were added to the roll of membership; and a committee was appointed to report statistical facts regarding the results of the use and non-use of alcohol in the treatment of diseases at the next annual meeting of the Association.

All the officers were unanimously re-elected for the ensuing year, namely, for President, N. S. Davis, M. D., of Chicago, Ill.; Vice-Presidents, I. N. Quimby, M.D., Jersey City, N. J.; J. B. Whiting, M.D., Janesville, Wis.; F. E. Yoakum, M.D., Shreveport, La., and J. Taft, M.D., Cincinnati, Ohio. For Secretary, T. D. Crothers, M.D., Hartford, Conn. For Treasurer, G. W. Webster, M.D., Chicago, Ill.

The next annual meeting is to be held in Milwaukee, Wis., during the first week in June, 1893. The objects of this organization and the strictly scientific character of its work thus far, should command for it the earnest attention of the profession at large.

EDITORIAL NOTES.

The Health Boards of Cities.—Drs. Jacobi and Prudden, following the example of Dr. Janeway, have resigned their Health Board positions in New York City. In the editorial columns of the *Herald* of that city it is intimated that the Academy of Medicine will be called upon to pass its opinion on the existing methods of health administration, inclusive of *the practice of removing capable medical men from* office in order to make room for politicians. The writer adds regarding the retirement of Drs. Jacobi and Prudden: "These two physicians are eminent in their profession and their work in behalf of the public will be greatly missed. If it leads to any improvement in the methods, scope and independence of health officers, it would not be a bad thing." If it can be proved before the Academy of Medicine that competent medical men are removed on the pressure of office-seekers, the Academy should publicly and pungently criticise such action. And what is true of that body is likewise pertinent to similar representative organizations in other cities; the faithful medical official should to them be an object of pride and solicitude, who should not be left unsupported in the time of his attack and injury by malign influences of whatever nature.

Another Medical Dictionary Announced.—A new pronouncing dictionary of medicine, collated by Dr. J. M. Keating and H. Hamilton, is in preparation in Philadelphia, the birthplace of many lexicons. The publisher, W. B. Saunders, states that the types have been specially cast for the book, and the paper specially made; size royal octavo; price in cloth, $5. If we mistake not, each of the Philadelphia medical ok concerns has its new diction-director, while me of them have more than one to look after. ord-book making is in the ascendancy at the pres- t time, and not only are publishers ready to make eir ventures, but there is no evident lack of ready orkers in that most laborious of literary fields. rom a recent article in the *New Englander* we gain hint of explanation and a *raison d'etre*, when it tates that "we are living in a markedly linguistic ra, when more and better work is doing in the sphere f English philology than in any preceding era— ork accomplished, it is pleasing to state, mainly by nglish and American scholars. One of the most ronounced forms of this modern movement is lexi- ography. As the closing decade of the century is ntered, we find that this movement is wellnigh at ts maximum, so that both at home and in England, o English book is commanding more attention than he English dictionary, and we are living more than ver in an age of words." There can be little doubt hat the *Index Catalogue* of the Surgeon-General's Of- ice, and the *Index Medicus*, have been both an incentive nd an aid to the army of the lexicographers. Some f them only have the grace and gratitude to publicly dmit their debt. In England, the publishers of ord-books are in less active competition, The "Lex- con of Medical Terms" of the New Sydenham Soci- ty has now reached Part XVIII (Mit–Ne). Four ears more will be required to finish it. Inasmuch s Part I was issued in 1878, the disparity between he early and the late numbers will afford entertainment to the critics and others who have the time to o into a comparison.

CHLOROSIS TREATED BY STOMACH WASHING AND REASOTE.—According to the *University Medical Magazine*, not enough has been seen in this country of the use of stomach washing and creasote in chlorosis. Noting the prominence of symptoms of gastric derangement present in a large number of chlorotic cases, Pick has given, in the *Wiener Klinische Wochenschrift*, the suggestion that more reliance should be placed on those remedial measures which relieve the atonic or dilated condition of the stomach than on iron. In sixteen cases, he has practiced daily the washing out of the stomach; all of these recovered in three or four weeks, whereas, they had resisted treatment by iron for a month or more. In other cases in which stomach washing was not thought expedient, he had recourse to creasote, using the following formula:

℞. Creasote, 3 grs.
Sugar of milk, 8 grs.
M. Make four capsules.
Sig. One after each meal.

The advantage derived from creasote is in its power to control the fermentative changes to which these patients are liable.

HYSTERIA SYMPTOMATIC OF RENAL OR ABDOMINAL DISEASE.—Leopold has expressed the opinion that hysteria is not a functional neurosis, but is the symptom of a pathologico-anatomical lesion that should be sought for and found. This cause is not by any means always in the sexual organs. Among the non-sexual causes he gives a prominent place to floating kidney and atonic condition of the bowels and of the abdominal walls. The treatment for floating kidney should be by a suitable bandage and not by fixation by suture: in which plan he has the support of Schramm and von Bergmann. In those cases in which atony of bowels exists, relief is frequently obtained by small meals, six or eight daily, with restricted fluids, repose after eating, and external massage after meals.

VICHY WATER IMITATIONS.—President Carnot, of the French Republic, and the lessor company, now holding rights in the Vichy springs, are plaintiffs in a suit against a New York syphon-water dealer. The defendant has for years been engaged in the imitation or purported imitation of waters of a certain spring, called "Grand Grille" of Vichy; the plaintiffs now ask that an injunction be granted against future infringements, and damages on account of past imitations. be awarded. From this bill of complaint, it appears that the French nation is the true owner of the Vichy property, and President Carnot appears in the suit in his official capacity, as head of the French government. If the plaintiffs win in this suit, any use of the word Vichy, as descriptive of artificial waters made in this country, will be interdicted. The defense has thus far simply indicated an intention to dispute the complaint on technical grounds, such as the question of jurisdiction and the like.

ADULTERATION IN THE UNITED STATES.—A writer in the Philadelphia *Star* refers to the enormous quantities of materials that are sold in this country, the only known use of which is to dilute or adulterate our food articles, and says: "It is estimated that ninety millions dollars' worth of fraudulent food-products are annually disposed of, in these United States, either mixed with good articles or sold in place of them." This represents the extent of the theft perpetrated on the consumer by men who coin fortunes with "cheap" wares. Incidentally the products of the farmer are depreciated, so that the producer feels the steal along with the consumer.

OIL OF CLOVES AND THE MOSQUITO.—The *Indian Medical Record* has a statement by a native surgeon to the effect that the oil of cloves is abhorrent to the mosquito. It is his habit to pour three or four drops of this oil on his pillow on going to bed. The insects never trouble him after that. Those of his family and friends who have tried the experiment, report similar gratifying results. The oil of cloves has been recommended by some observers, as an external application to allay irritation from the bites of insects.

TYPHUS FEVER IN BRITISH CITIES.—From the local reports collated by the *Public Health*, it is learned that cases of typhus fever have occurred in the following cities: Carlisle, 12 cases; Dundee, 27 cases and Cork 11 cases. At Glasgow, London and Liverpool, cases have been reported, a certain proportion of which owe their origin to importation from Eastern Europe. At Carlisle, the epidemic is reported to be at an end in the *Lancet* for June 11.

Dr. Julian J. Chisholm of Baltimore, has had the degree of LL.D. conferred upon him by South Carolina College of Columbia, S. C.

Barnes Hospital and Medical College.—Robert A. Barnes, who recently died in St. Louis, bequeathed more than a million of dollars to endow a hospital and found a medical college. An organization of the institution is already effected, with Dr. Chas. H. Hughes as President of the faculty and member of the Board of Trustees.

In the last issue of The Journal, Dr. Truax directs attention to what he believed to be an inaccuracy in the official report of the late meeting at Detroit. The report was made by the most reliable and experienced medical society stenographer in this city, and our attention is directed to the fact that the report as published pertaining to the appointment of the committee referred to by Dr. Truax was correct, and so decided by the Association.

ABSTRACTS.

Decadence of Surgical Antisepsis in England.—In the *Northwestern Lancet*, the London letter repeats the assertion, that has been made elsewhere, that London surgeons have departed from their first love for antisepsis. The writer was surprised to see the instruments taken from their cases and then dipped in a perfunctory manner in the bath; after which they were used without further precaution. At the London Hospital, another visitor, a Frenchman, at the side of the writer, expressed some surprise, *but admitted that he* had been told that the English surgeons are no longer the strict observers of surgical cleanliness that they once were, and that Mr. Lister is the least cleanly of them all, in point of fact, the word "dirtiest" was the one employed by the French guest—a forcible expression to say the least.

A New Treatment of Acute Urethritis.—Drs. Cotes and Slater have contributed to the *Lancet* for February 27 some new points in the treatment of acute gonorrhœa. The patient is first of all told to empty his bladder, after which he reclines upon a couch. An endoscope tube, warmed and oiled, is then passed into the urethra. Ordinarily there is no great amount of pain produced by the passage of this instrument, but at times it may be sufficiently severe in sensitive persons to make it desirable to previously inject a 10 per cent. solution of cocaine. The urethra is then carefully cleansed by dry cotton wool, attached to a stilette, and examined with the aid of electrical illumination. The precise extent of the inflammation can be clearly seen. It is, as a rule, about five inches back of the meatus, or it may be four inches if seen as early as the third day. The implicated area is readily recognized by its swollen, bright-red appearance as contrasted with the rosy color of the uninflamed mucous membrane. It is expedient not to pass the endoscope far back of the posterior limit of the urethritis, which is usually quite sharply defined. Another cleansing is next done, so as to remove all of the discharge that can be brought away. A mop of cotton-wool wet with a solution of nitrate of silver, 10 grs. to the oz., is then passed completely through the tube and beyond it. The tube and mop are drawn out together. For the two inches nearest to the meatus a fresh mop is used, so as to thoroughly dose this very susceptible part. The pain caused by these procedures passes away in ten minutes. The patient is told to take a hot bath that night, and to remain in bed the following day. A saline purgative and an alkaline or balsamic remedy may be given internally. From four to six times daily the urethra should be injected with a simple cleansing injection.

Over forty cases treated in this way have averaged a cure in twelve days; chordee was present in a few of them. Th merits of this treatment seem to be, first, that the practitioner can see the tissues which he is about to medicate second, that the application is brought into contact with surface that has been thoroughly cleansed; and third, tha the application is made at a time when the walls of th urethra are stretched, so that its furrows and folds hav been obliterated. The proponents of the treatment regar the nitrate of silver application with especial favor, for the hold that it is not only a good microbicide, but exerts healing influence upon the diseased mucous membrane.

DOMESTIC CORRESPONDENCE.

Thyroid Dislocation of the Femur, with Integrity of the Ileo-femoral Ligament.

To the Editor of the Journal of the American Medical Association

Believing the following to be a rare, if not unique form of accident I am induced to report it:

On the morning of Nov. 20, 1891, Hugh Taylor, age 7, fell from the back of a mule. As no one saw the fall, it cannot be told how he struck the ground, but he was unable to arise on account of injury to the left hip.

I saw him two hours after the accident, and found him lying upon his back inclined to the left side. His left leg was flexed upon the thigh, and the thigh flexed upon the trunk to an acute angle, and abducted to such an extent as to rest easily upon the bed, in the position he had assumed, without any extra support. There was tension of the abductor muscles, on the inner side of the thigh. The hip was flattened. The limb was fixed so that I was not able to abduct or extend it.

Diagnosis.—Thyroid dislocation of femur, with integrity of the ileo-femoral ligament.

Having administered an anæsthetic, I placed him on his back with an assistant to steady the pelvis. Standing on his right side I grasped his thigh just above the knee with my left hand, and the left buttock with my right hand, the thumb being on the perineum. I then flexed the thigh strongly on the trunk and brought the knee across the middle line so as to throw the head of the bone, below and external to the acetabulum. Then carrying the limb upward with both hands, I attempted to reduce by extension; at the same time, as the ileo-femoral ligament was put on the stretch, rotating the limb slightly *outward* to relax the ligament and direct the head of the bone toward the socket. The first attempt failed but the second succeeded, and while in the act of rotating the limb, reduction was effected with a dull snap, audible only to myself and the nearest assistant. The limb dropped easily beside its fellow, and all the appearances were normal. Rapid and complete recovery followed.

T. B. Hill, M. D.

Ruff Creek, Pa.

THE VALUE OF MILK LABORATORIES FOR THE ADVANCEMENT OF OUR KNOWLEDGE OF ARTIFICIAL FEEDING.

BY T. M. ROTCH, M.D., OF BOSTON.

Two important factors are demanded by physicians of the present day in solving the problem of rational medicine: First, a means of saving time; second, exact methods of work.

I have long felt that the artificial feeding of infants should be reduced to a more exact system, and that in this way an endeavor should be made to rescue this important branch of pediatrics from the pretensions of proprietary foods and the hands of ignorant nurses. With this purpose in view, I have established a laboratory in which the materials used are clean, sterile, and exact in their percentages, and are combined in any proportion that the physician may wish to prescribe. Laboratories of this kind should be established everywhere, and physicians should write prescriptions for their infant patients' food and put them in the hands of the milk-modifier in his laboratory, just as they write for combinations of drugs in disease, and entrust them to the pharmacist in his drug shop. As the result of clinical experience in infant feeding, I have reached the conclusion that slight changes in the percentages of the three elements of milk of which we have most accurate knowledge, namely: the fat, sugar and albuminoids, have an important bearing upon the management of the digestion and nutrition of infants.

In analyses of milk from seven women the fat, sugar and albuminoids varied to a marked degree, and yet the infants all digested well and throve on their individual percentages, while what agreed with one produced serious symptoms in another. It seems, therefore, that so far as milk is counted upon as a food, it should be understood to be a general name of the food for the infant, just as dinner is a general name of food for the adult.

This general dinner (milk) of the infant, should also be modified in its various parts to suit the digestion of the individual infant.

Perhaps it would be of interest to know what materials were needed, and what processes were gone through with, in carrying out the prescription of the physician.

A laboratory such as that described has already been established in Boston, and is in successful operation, a number of physicians having found it to be an indispensable adjunct to their daily practice.

An important matter is the careful supervision of herds of cows especially selected as to breed and systematically fed, so that the analysis of their milk should be of an almost unvarying percentage. The morning's milk of these cows, milked into glass and kept scrupulously clean, is rapidly cooled and in a few hours delivered at the laboratory. The atmosphere of the laboratory is kept pure and fresh by means of a large fan that keeps up a constant outward current of air. The laboratory itself is lined with white tiles, and contains a separator by means of which a stable 16 per cent. cream can be quickly obtained from the milk. There is also a large sterilizer into which not only steam can be introduced, but in which the milk can be exposed to high or low temperatures, at the will of the modifier.

Having once obtained a pure, clean skimmed milk and cream of a stable percentage, it is merely a matter of mathematic calculation to combine these fluids in such proportions as to produce a mixture in the percentage of fats and albuminoids prescribed by the physician.

The sugar percentage is obtained in like manner by using a carefully prepared 20 per cent. solution of milk sugar and distilled water.

Diagrams were made to show the prescriptions written by the physicians in fat, sugar and albuminoid percentages, the same prescriptions translated into drachms and ounces by the milk-modifier, and the figures returned by the chemist to whom the modified milk was sent to test the accuracy of the modifier's calculations.

I have had a large number of test analyses made, so that there is no longer a doubt but that fairly exact combinations can be made in this way.

As the chemistry of the mineral matter in woman's milk is so little known, it is better to ignore that element for the present. Three figures only need be remembered, corresponding to the percentages of fat, sugar and albuminoids in average human milk—namely: 4, 7 and 1.50.

Starting with these figures, the physician can then easily change one or more of them, either to increase or decrease, according to the need of the especial infant.

As objection has been made to sterilizing at 212° F., this could just as well be done at the safer and lower temperature of 167° F. in the laboratory sterilizer.—*Medical News.*

NECROLOGY.

Dr. Herbert Fearn, of Brooklyn, died June 25, 1892, aged 58 years. He was born in England, but was brought to this country while a child. His medical education was obtained in New York City, at the now defunct college on Thirteenth street with which Carnochan, Peasly and Fordyce Barker were identified, graduating there in 1857. He was a member of numerous societies, accepting official responsibilities in a few of them. Among these were the Royal Arcanum and the Central Reform Association, a taxpayers' league for the repression of dishonesty in civic affairs. He read before the Kings County Medical Society, in 1871, a paper on the use of veratrum viride in large doses as a substitute for blood-letting in puerperal convulsions, which was probably an original proposition with him. Many physicians subsequently reported favorable results, and Dr. Fearn was led to believe that not a few lives of mothers, and infants as well, had been saved by an heroic dosage of veratrum. The cause of Dr. Fearn's death was fatty degeneration of the heart. He was an earnest, thoughtful and considerate man and was constantly employed upon the welfare of his fellows.

Death of an Eminent Medical Author.

The death of Sir William Aitken, of Netley, removes a pathologist and medical author of the first rank. The American profession were familiar with his merits, through his medical treatise, first issued in the sixties and which passed through seven or more editions in England and this country. He was for many years the professor of pathology at the Army College at Netly, and an examiner in medicine for various public services. He was a member of the Royal Society and was made a Knight in honor of the Queen's jubilee in 1887, and in recognition of his services to military medicine and sanitary science. In the latter field he had been a co-worker with the late Professor Parkes. His death took place on the 27th ult., at which time he was in his sixty-seventh year.

BOOK REVIEWS.

Proceedings of the Florida Medical Association. Session of 1891. Printed for the Association at Jacksonville, 1891.

This pamphlet of eighty pages gives a report of the annual meeting at Pensacola, held in April, 1891. The growth in the society is indicated by a three day convention fairly well attended and by contributions from numerous sources. The Association has had its importance increased by the workings of the Medical Examination legislation, and the address of the Presiden [illegible] Thomas P. Gary, of Ocala, shows the importance [illegible] izing to the utmost the protective properties accorded to the regular profession of Florida, under Examination Acts. That State, he says, is prospering, is growing in wealth and reputation; and from that very fact invites the attention of quacks and humbugs, against whose presence in the State the Medical Boards have been called into existence to protect the public. Dr. James C. Neal, of Lake City, contributes a paper on Legalized Crime in Florida, in which he refers to the ignorant practice of midwifery by the rural dame and black granny. As a result of extensive correspondence and his own observation, he thinks that at least fifty mothers and twice as many infants are annually lost through these ignorant persons. A list of forty cases is given to show the various repugnant practices that are indulged in, both as to the mothers and their offspring. Dr. Neal points out the need of a change in the laws governing this subject, so as to obliterate the quasi-protection that at present seems to forbid the prosecution of ignorant but homicidal midwifery. A long report on leprosy by Dr. R. P. Daniel is presented on behalf of the State Board of Health growing out of unproven statements, made through the press, that there were numbers of lepers at Key West and Tampa, engaged in the manufacture of cigars. The truth of the matter appears to have reduced the number of leprous persons down to six or eight at any one time; and of late years, through death, that number has been decreasing. These unfortunates are kept off the street, and no instance is known where the disease has been communicated to any other member of the family. The author believes that the Key West cases were imported from Havana, "a nursery of infection" that is dangerously near that part of our domain. The writer truthfully remarks that it is the duty of the State, and not of the town or county where these cases chance to become located, to make provision for leprosy. Louisiana has done its duty in this regard, and already has its hospital and thus cares for those who, through no fault of their own, become outcasts from society and the victims of a lingering, loathed malady. These lepers are sick people and not criminals; the spirit of our times and country forbids that they shall be injured by harsh treatment or by a studied neglect.

SELECTIONS.

HOT AIR REGISTERS IN FLOORS.—We have noticed on several occasions a most disgusting, if not dangerous, practice arising from placing hot air registers in floors. Reference is made to using the register for the purpose of a cuspidor. If attention is paid to this, one will be surprised to note the number of persons guilty of this act.

Recently in a hotel heated by natural gas, and having a large hot air register in the floor, we saw not less than half a dozen persons discharge their saliva into it. One of these was the proprietor of the hotel, an old man suffering from chronic bronchitis with a copious muco-purulent expectoration. One can scarcely imagine anything more horrible. And if we consider that consumptives may sometimes cast their expectoration into the register, the danger of the practice becomes apparent; for a more efficient method of scattering germs of tuberculosis through the air of an apartment could not be devised.

The floor is seldom or never the place for a hot air register. With the greatest possible care a considerable amount of dirt will collect in it, polluting the air more or less, that enters the room. In the absence of cuspidors, it always offers a tempting place for the chewers of tobacco to dispose of their spittle without betraying their filthy habit. Persons coming in from out of doors, with wet, dirty feet, will nearly always stand over the register to dry their shoes, affording another source of air pollution. Other objections present themselves, but those given should suffice to condemn placing hot air registers in floors, and especially in public places.—*Monthly Sanitary Record* (Ohio).

IT HAS been decided that the next Congress of Food Analysts shall take place in Vienna in 1894. A committee has been appointed to take steps for the preparation of "A Codex Alimentarius," in accordance with a resolution passed at the previous meeting of the Congress in 1891.

DISCRIMINATING AGAINST TWO-YEAR COLLEGES.—The Oregon State Board of Health has adopted a rule defining a medical institution in good standing to be one requiring three regular sessions of six months each, covering three years' time. A Dr. T. Barwood was rejected on the ground that the school from which he graduated does not have such a three years' course. He brought the case before the circuit court, which rendered a decision adverse to the power of the State board to make such distinction. On appeal to the supreme court the decision was overruled and the authority of the State board sustained.

THE TERM "REGULAR" DEFINED.—The Surgeon General of the United States rendered a decision last fall, which, coming from so high an authority, ought to satisfy the most exacting for a definition of the word "regular."

In the army regulations there is a paragraph which specifies concerning the qualification of the physician being admitted, and says he must be a graduate of a regular medical college. A member of Iowa Homœopathic Medical Society wrote a letter to the Surgeon General, asking him to state definitely what was meant by the word "regular."

The answer was as follows: "The term regular as used in paragraph 1544 Army Regulations, is used in its most comprehensive sense, as indicating a college well equipped and prepared to cover the whole ground of the science and art of medicine in its teachings, and requires not less than a three years' course of study to secure its diploma."

MISCELLANY.

THE MEDICO-LEGAL SOCIETY OF CHICAGO.—At the annual meeting held June 4, officers were re-elected as follows: President, Judge Oliver H. Horton; vice-presidents, Dr. Daniel R. Brower and Dr. James Burry; treasurer, Dr. Joseph Matteson; secretary, Dr. Archibald Church.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from June 25, 1892, to July 1, 1892.

Capt. William O. Owen, Jr., Asst. Surgeon U. S. A., is granted leave of absence for one month, with permission to apply for an extension of one month.

First Lieut. Frank T. Meriwether, Asst. Surgeon U. S. A., now on duty at Ft. Adams, R. I., will report in person to the commanding officer, Madison Bks., N. Y., for temporary duty at that post, during the absence of Capt. Henry S. Turrill, Asst. Surgeon U. S. A.

First Lieut. Charles F. Mason, Asst. Surgeon U. S. A., on being relieved by Capt. Raymond, will report in person to the commanding officer, Ft. Snelling, Minn., for duty at that post.

Capt. Edward Everts, Asst. Surgeon U. S. A., is relieved from duty at David's Island, N. Y., and will report in person to the commanding officer, Ft. Robinson, Neb., for duty at that post relieving Capt. Henry I. Raymond, Asst. Surgeon U. S. A. Capt. Raymond, on being relieved by Capt. Everts, will report in person to the commanding officer, Ft. Washakie, Wyo., for duty at that post, relieving First Lieut. Charles F. Mason, Asst. Surgeon U. S. A.

First Lieut. Champe C. McCulloch, Jr., Asst. Surgeon U. S. A., now on duty at Ft. Sam Houston, Texas, will report in person to the commanding officer, Ft. Hancock, Texas, on July 1, 1892, for temporary duty at that post. By direction of the Secretary of War.

First Lieut. Henry C. Fisher, Asst. Surgeon (Ft. Yates, N. D.), is granted leave of absence for twenty days.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending July 2, 1892.

Asst. Surgeon C. P. Baggs, ordered to Naval Hospital, Mare Island, Cal.

Surgeon M. C. Drennan, from Naval Academy and to Navy Yard, Norfolk, Va.

Surgeon G. F. Winslow, from Navy Yard, Norfolk, Va., and wait orders.

Asst. Surgeon C. F. Stokes, from Naval Hospital, Mare Island, Cal., and wait orders.

Asst. Surgeon G. A. Lung, from Naval Hospital, New York, and to U. S. S. "*Minnesota.*"

Asst. Surgeon G. H. Barber, from U. S. S. "Minnesota," and to Naval Hospital, New York.

P. A. Surgeon V. C. B. Means, from Navy Yard, New York, and to Naval Hospital, Norfolk, Va.

P. A. Surgeon N. H. Drake, from Naval Hospital, Chelsea, Mass., and to Navy Yard, New York.

Asst. Surgeon J. E. Page, from receiving ship "Independence," and to the U. S. S "Thetis."

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ORIGINAL ARTICLES.

THE INFLUENCE OF PARTURIENT LESIONS OF THE UTERUS AND VAGINA, IN THE CAUSATION OF PUERPERAL INSANITY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY GEORGE H. ROHE, M.D.,

PROFESSOR OF MATERIA MEDICA, HYGIENE AND MENTAL DISEASES IN THE COLLEGE OF PHYSICIANS AND SURGEONS, BALTIMORE; SUPERINTENDENT OF THE MARYLAND HOSPITAL FOR THE INSANE, CATONSVILLE, MD.

I venture to report the following cases as a contribution to the etiology and treatment of puerperal insanity:

Case 1.—Mrs. A. T. White, aged 33 years, has been twice married, first at the age of 17 years. Of this marriage one child was born. Her husband died two and a half years after, and after remaining a widow four and a half years she married her present husband, who is a minister. There is no family history of insanity. In 1882, three days after the birth of her second child she had an attack of puerperal insanity, maniacal in character, which lasted five months. She remained well until October, 1886, and was then again attacked with acute mania. After this had continued ten weeks she was admitted to the Maryland Hospital for the Insane. She was very much excited, violent toward her husband and others with whom she came in contact. She was extremely profane and obscene, irritable, morose and disposed to fight on the least provocation. She soiled her clothing, bed and room and was a source of great trouble to the attendants. A pleasant "good morning" addressed to her by the physician on passing through the ward was generally the signal for a volley of obscenity and profanity. She sometimes acted as if she had hallucinations of hearing, but on account of her ill-temper, no clear history of hallucinations or delusions could be obtained. She did not improve, but showed a progressive tendency toward dementia. Her menstrual periods were attended by an exacerbation of symptoms. She was always more violent at her periods. An examination was made of the pelvic organs last September, and the following conditions found to exist: The perineum was torn down to the sphincter ani, causing the vulvar opening to gape widely. The cervix uteri was lacerated to the vaginal insertion on the left side and to a slighter degree on the right. There was decided intra-pelvic induration on the side of the uterus. Believing that these abnormal conditions, together with the evident unfavorable influence of the menstrual periods, justified the induction of the menopause, I removed the uterine appendages on October 6, 1891. The operation was performed under aseptic conditions, all instruments and dressings being sterilized by steam and hot distilled water used both for cleansing the hands, surface of the patient's body and irrigation of the abdominal cavity. No chemical antiseptics or disinfectants were used. No drainage.

The right ovary was cystic and firmly adherent in Douglas' cul de sac. Left tube tortuous, and broad ligament thickened and congested. The abdominal cavity was irrigated until the water returned clear. Five deep and two superficial silk-worm gut sutures were employed to close the incision. Anæsthetic used, A. C. E. mixture. Patient recovered from the operation. Sutures were all removed on the seventh day and the wound found firmly united.

Two months after the operation, the patient had shown considerable mental improvement. She began to take an interest in books, pictures, flowers, etc. While her attempts at conversation were disconnected she dwelt more on pleasant themes, and her former violence of speech had almost entirely left her. After Christmas she began writing letters to her husband, making inquiries of her children and expressing much affection for them. This she had not done for over five years. She continued to improve, up to a certain point, and at her husband's visits, she received him affectionately, but quietly. While memory of past events and love for her husband and children seemed to return gradually, there was still a lack of coördination of thought, and this has not further improved. The brain disorganization (physical basis of dementia) had probably progressed too far to be restored even approximately to the normal. At the time of writing, eight months after the removal of the appendages the patient is quiet and cheerful, although relapsing into profanity when irritated. She no longer fights, or soils her bedding, room or clothing. She dresses and undresses herself, makes her bed, sweeps her room and waters the flowers and plants on the ward. She is not restored mentally, probably never will be; indeed, is likely, I think, to pass deeper into dementia. But, from a violent, excited, noisy and dirty patient, she has improved so much as to allow her to be kept on the quietest ward in the hospital, and this gain may, I think, be largely, if not entirely ascribed to the removal of the uterine appendages. I may say that I subsequently sewed up the lacerated cervix and restored the vaginal outlet by Emmett's procedure, without any appreciable effect upon the patient's mental condition.

Case 2.—Caroline A., white, aged 39 years, married fifteen years and the mother of seven children. Last child was born in April, 1887, four months before her admission to the hospital. No history of insanity in the family. Four weeks after the birth of her last child she suddenly developed delusions of persecution; claimed that some one was after her and trying to kill her. Her language became very profane and vulgar. She at one time made a violent attack upon her mother. She was one of the most troublesome and destructive patients in the hospital. She would strip herself on the ward, attack the attendants and the other patients, use the most obscene language, break the furniture, dig the plaster out of the wall of her room, soil her clothes, bed and room, jump at and hug any man coming within her reach and make herself generally disagreeable to her surroundings. She was always worse during her menstrual periods, and at these times was kept secluded in her room on account of her tendency to strip herself.

Vaginal examination showed a moderate perineal tear, but a deep bilateral laceration with eversion and erosion of the cervix, and enlarged uterus. Pelvic induration of moderate degree in Douglas' cul de sac. Abdominal section and removal of the uterine appendages was done on December 15, 1891. Tubes on both sides were thickened, congested and convoluted. Left ovary adherent. Small cyst in left broad ligament. No irrigation. No drainage. Patient recovered well from operation and sutures removed on the seventh day. Incision firmly united.

The patient seems to be slowly recovering a part of her mental faculties. She has become cleanly in habits and no longer indulges in her former vulgarity. The day before this present writing, she received a visit from one of her daughters and her youngest child and received them with every demonstration of affection. Her conversation is not connected, but it is now neither violent nor offensive. She sleeps in a dormitory with six other patients, eats in the ward dining room, keeps herself neat and clean, and is industrious in the use of the needle. Barring the non-restoration of her mental faculties, there has been a complete transformation in the habits, acts and speech of this patient.

Case 3.—Mary L. B., age 37 years, white, married thirteen years, and mother of six children, the youngest four months old at the time of her admission to the hospital. The family history is bad, mother being at one time insane, and her father very intemperate. She was admitted to the hospital May 16, 1890. She had one previous attack of insanity ten years before the *present attack, but it is not certain whether* it was connected with the birth of any of her children. She had delusions and hallucinations. She was never very violent, but was talkative, exalted, and would strip herself on the ward. She was very much run down when brought to the hospital, and gained strength very slowly under stimulants and nutritious diet.

During her menstrual periods she became exalted and evidently had increase of sexual excitement. Her face was *flushed and she would try to get near to, and touch the* physician passing through the ward. At other times she was quiet and unobtrusive, but evidently *under the influence* of her delusions.

Examination disclosed bilateral laceration of the cervix with thickening of the posterior lip. There was an inflammatory induration on the left side of the uterus, which was very sensitive to pressure.

On November 25, 1891, the uterine appendages were removed. *Left ovary* adherent and tube thickened and convoluted. Irrigation. No drainage.

Patient recovered *without* a bad symptom. *Stitches* removed on the seventh day, and incision found firmly united.

In this patient delusions of personality continued for several weeks after the operation. but gradually faded away. Her conversation became connected and rational and in two months after the operation her mental faculties seemed to be completely restored.

Her climacteric symptoms, headache, backache, constipation and nervousness, were especially severe, but at this writing, over six months after the operation, their severity is lessened, and she is more comfortable. Her mental condition is completely restored to the normal, and as soon as the symptoms of *the menopause above mentioned disappear,* I shall discharge her from the hospital as recovered.

Case 4.—Mrs. Fannie L. C., aged 28, white, married and mother of three children. No hereditary history of insanity. Eight days after the birth of her first child she became insane, the mental disturbance lasting two weeks. Seven months after the birth of her second child she had another attack which lasted fifteen weeks. A third attack began a year after the birth of her last child. Three days after this outbreak (on December 28, 1891) she was admitted to the Maryland Hospital for the Insane. She was excited, but very weak. *Her language was shocking in its profanity* and obscenity. Sexual excitement was pronounced. For several weeks her pulse was so weak *and rapid, that at times* her life was despaired of. She was kept in bed and fed every two hours with milk, eggs and brandy. Digitalis was given to keep up the force of the heart. Her mental condition did not show any signs of improvement with returning strength. An examination under anæsthesia disclosed a deeply ruptured perineum with gaping vaginal entrance, lacerated cervix and prolapse of the right ovary.

On March 9, 1892, the uterine appendages were removed. *No adhesions were found.* Both ovaries were very much enlarged, being at least three times the normal size.

On the day previous to the operation, this patient was cross, profane and obscene in [illegible] Within two hours after the operation, as I [illegible] she burst into tears, asked me to forgive her for the ugly language she had used toward me and the assistant physicians and attendants, and acted *in an entirely rational manner.* She recovered well from the effects of the operation, but on the *eighth day after the operation,* and the day after removal of the sutures, the evening temperature ran up to 102.4°, and on examination a mural abscess was discovered, which discharged freely through the stitch holes for about two weeks. In spite of this, however, her progress toward recovery, both physical and mental, was uninterrupted, and she was discharged, well, on May 8, two months after the operation.

It will be noted that in each of these cases there was some lesion of the genital passage dating from parturition. In three out of the four cases there was likewise inflammatory adhesion and other morbid changes in the ovaries and tubes. In the fourth case there was great enlargement of the ovaries, with prolapse of one of these organs, subjecting it to more or less constant irritation.

Do not these cases force us to the conclusion that the etiology of puerperal insanity is to be sought, not in the brain itself but in pathological conditions of the sexual organs—conditions which, in the first place, favor the absorption of septic materials, and which, secondarily, leave behind them a source of irritation, to which such sensitive organs as the ovaries cannot be constantly subjected without deleterious effects upon the organism.

I point with some satisfaction to the results ob*tained from the radical treatment* adopted. Out of four cases, two are entirely recovered. The other two were cases already subjects of brain enfeeblement, in whom no recovery could be hoped for, much less expected. However, the transformation of these women from dirty, noisy, destructive and obscene viragoes to persons who can be tolerated upon the quietest ward of the hospital is a distinct gain to the institution and unquestionably to the patients themselves. In cases such as these, I am sure no objection based upon the "unsexing" of the patients can hold. My experience inclines me to the opinion that there are other reasons besides a pathological condition of the pelvic organs, justifying the removal of the ovaries and tubes in insane women, but when there is actual local disease demanding the operation without regard to the mental condition, a physician having the good of his patient at heart, dare not hesitate.

Time is lacking to review here the unsatisfactory [illegible] that have been propounded to account for the origin of *puerperal* insanity. I *offer* here no theory, but submit the cases which I believe justify the following conclusions:

1. Puerperal insanity is, in at least the large majority of cases, an infection psychosis.
2. Without rejecting the influence of other factors such as heredity, anæmia, exhaustion, mental shock and distress, careful observation will show that few cases of puerperal insanity occur without preceding *or coincident puerperal infection.*

The reasons for this opinion may be briefly summed up as follows:

1. Puerperal insanity occurs in the great majority of cases within the first ten days after delivery—about one-half in the first five days—the same period during which puerperal infection usually occurs.
2. It is usually accompanied by elevation of temperature and other evidences of febrile disturbance.
3. The clinical form in which puerperal insanity manifests itself is, in the majority of cases, that of acute, delirious, or confusional mania. Depressive states are rare except as secondary forms. In other words, the most frequent condition is one most closely resembling febrile delirium.
4. The death-rate is much higher than in simple mania. Death occurs from exhaustion, usually with high temperature and rapid pulse.
5. *Post-mortem examinations,* though *apparently* infrequent in these cases, have shown grave involvement of the pelvic viscera.
6. Examinations of the pelvic organs during life show lacerations of the perineum and cervix uteri (facile channels of infection in the puerperal woman). As secondary conditions are found intra-pelvic (peritoneal) inflammations, and consequent abnormal locations, fixations and congestions of the uterus, tubes and ovaries.
7. The results of operations seem to show that removal of local sources of irritation increases the chances of recovery from the mental disease.

PUERPERAL HYSTERIA (INSANITY?).

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY W. P. MANTON, M.D.,
OF DETROIT, MICH.
Vice-President Medical Board of the Woman's Hospital and Foundlings' Home; Consulting Gynecologist to the Eastern and Northern Michigan Asylums for the Insane, and St. Joseph's Retreat; Lecturer on Obstetrics, Detroit College of Medicine, etc.

While the alienist, the surgeon and the gynecologist have long recognized the importance of hysteria in its counterfeit presentments of various morbid conditions of the human body, the obstetrician has been exceedingly backward in connecting neuromimetic phenomena with the disorders incident to pregnancy and the lying-in state.

Indeed, a careful review of obstetrical literature for the past few years, fails to discover more than a half dozen or so articles in which this important subject has been at all considered, while the text-books on midwifery contain little or nothing upon this point, and nowhere have I been able to find a word written in regard to hysterical mental conditions developing during labor or the puerperium. Yet I am quite sure that manifestations of this nature cannot be so very infrequently met with, the fact probably being that they are not recognized as such, but are put down as simple cases of puerperal mania. It seems to be the general impression that the insanity of childbed is a mental disorder peculiar to lying-in women, differing essentially in its manifestations from insanity developing under other conditions.

The careful observation of a considerable number of such cases, and the study of their histories as noted in asylum case books, convinces me that this is not so, and I do not believe that even the most expert alienist could, without a previous knowledge of the case, point out a single patient suffering from this disorder from a ward full of insane women non-puerperal.

The fact that a patient becomes mentally sick during the act of parturition or later, does not go to prove that the form of psychoses from which she suffers differs in any respect from mental derangement appearing at other times.

The classification of such cases into melancholia, mania and, rarely, katonia, is, it seems to me, more or less arbitrary and incorrect, since few cases, excepting, perhaps, the very acute septic manias which speedily terminate fatally, but display sooner or later, and generally repeatedly, both of the two first mentioned symptoms. The psychic manifestations, therefore, during the course of the disease, should be recognized and spoken of only as symptoms, not forms, of the brain disorder. It is not my purpose, however, to dwell upon this somewhat mooted question. In the present communication I simply desire to call attention to a symptom of insanity, a condition which might be termed a functional psychosis, and not generally recognized. Patients afflicted with this hysterical psychosis, invariably present a history of ante-partum hysteria. The attack develops suddenly either during labor or soon after, continues for a few days, generally less than a week, and as suddenly disappears, leaving the intellect clear and unimpaired.

During the whole period of the attack the bodily functions continue normal, the lochia are not diminished, and there is, as a rule, no fever.

The transition from sanity to insanity, and the recovery from the mental derangement, is generally so abrupt that the symptoms appear and disappear, to adopt the language of Levingstein-Schlegel, "as by a blow."

It has been my fortune to observe several of these cases, one of them about two years ago at the Detroit Woman's Hospital, and another more recently, the only one of which I have adequate notes, in my private practice. The history of this case will illustrate the point which I desire to make:

Mrs. S., a large, robust-looking woman of 24, passed through her first pregnancy without particular disturbance, excepting that at times she was nervous and mildly hysterical—a condition which had existed for some years—and also suffered from obstinate constipation. As far as I have been able to learn, the family history is good. A married sister is said to have been flighty after the birth of her child.

September 2, at 4:20 A.M., I delivered the patient with forceps of an 8-lb. girl. The labor had been comparatively easy, but toward the end of the second stage, the pains diminished in frequency and force, and finally became so feeble as to necessitate the use of instruments, just as the head had reached the perineum.

As is my custom, the patient was given a small amount of chloroform to inhale during the pains of the second stage, and complete anæsthesia was induced for a moment when the forceps were applied and the head delivered.

There was a slight tear of the perineum beyond the fourchette, but not sufficient to necessitate suturing. The blood loss was slight.

The patient came out of the anæsthetic well, was bright and cheerful, suffered no pain, and expressed her gratification that the trying ordeal was safely passed. I left her at 7:30 A.M., quiet and comfortable.

At 8 o'clock, half an hour later, her husband, who had been out of the city, and whose absence during the labor had been a source of worry to the patient, returned, but she failed to recognize either him or, for the first time, her mother and the nurse, both of whom had been present with her from the onset of labor. She also quickly developed hallucinations of sight, became voluble and incoherent in her language, talked of a crowd of people about her and of boats, complained of pain in the back of the neck—over which she held her hand, and asked to have her husband brought to her although he was then standing within a few feet of the bed. During the day she slept at intervals, was quiet, pleasant and obedient, and took her nourishment without objection. The pulse was 87, the temperature 98.4. The lochial discharge was normal, and uterine and abdominal tenderness absolutely wanting. The catheter was used three times during the day on account of slight tumefaction of the parts, with probably, voluntary retention of the urine.

September 3. Had a good night. Condition much the same as yesterday. When her baby is brought to her she looks at it with interest and then turns away. Asked if she is not pleased with her child she smiles and observes that "it jumps." Pulse and temperature normal.

September 4. Slept well last night. Hallucinations less marked. Recognizes the doctor, and calls him the "man", but cannot recollect his name. Asks him to come back soon and to bring her husband with him. Bodily condition normal; voluntary micturition.

September 5. Mental condition somewhat improved, although the hallucinations remain and she is still incoherent. Says that she feels sore all over. The pain in the back of the neck still continues but is evidently less severe. When asked a question which she does not desire to answer she laughs and says "huh". Pulse, temperature and excretions normal; no abdominal tenderness. She is much pleased with a bouquet which her husband brought her, fondles the flowers and places them on her bosom, although she still persists in refusing to recognize the giver.

September 6. Slept well. The urine which has been plentiful, is now passed voluntarily and in considerable quantities. During the forenoon the mental symptoms continued as before, but at 6 P.M., while her husband was sitting by the bedside, her mind suddenly cleared, the hallucinations vanished not to return and she appeared as strong and well mentally, as she had been and was physically. She had, apparently, no memory of what had occurred since the labor. The nape ache had disappeared, and only a slight pain in the sacral region was complained of. From this time on the case progressed favorably and there was no return of the mental trouble.

Remarks.—In spite of the fact that so distinguished an observer as Levingstein-Schlegel, is of the opinion that a psychosis with hallucinations developing during the first weeks of the puerperium, in the absence of other (non-puerperal) infectious disease and without preceding eclampsia, is due to puerperal infection, even though a careful physical examination fails to demonstrate the presence of fever or other somatic symptom, I think that septic infection may be ruled out in this case. The only other condition with which the mental manifestation exhibited in Mrs. S's case should be confounded is that known as Transitory Frenzy (Transitory Mania, T. Melancholia), but as the history of the case shows a marked difference in the symptoms displayed from those seen in the latter condition, I think that I am quite justified in excluding this and ascribing the psychic disturbance to hysteria.

The reason why this condition is not mentioned in works on mental diseases, is because it never comes under the observation of the alienist, being of short duration, and always cared for at home by the family physician, who, in all probability, also fails to recognize the nature of the mental sickness.

83 Lafayette Avenue.

DISEASED UTERINE APPENDAGES AS FACTORS IN MUSCULAR AND JOINT AFFECTIONS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, June, 1892.

BY M. B. WARD, A.M., M.D.,

Professor of Gynecology Kansas Medical College, Fellow of the American Association of Obstetricians and Gynecologists, President of the Western Association of Obstetricians and Gynecologists, etc.

Serious neurotic affections are so commonly attributable to diseased uterine adnexa, it is quite natural and, indeed, altogether the "latest style" to make diseased pelvic organs responsible for all morbific conditions when the true etiology is in the least obscure.

There is, perhaps, too much stress placed on the uterus and attached organs as the cause of systemic disturbances, and yet, it is frequently demonstrable that disease of these organs is the prime factor, or active agent in causing functional derangements oftentimes quite remote from the pelvis. In order that specialists shall not become too narrow in their views, it is prudent to endeavor to find the cause of nervous affections in every other part of the human economy, before any thought of the pelvic organs is considered. That is, should the patient give a clear history of suffering from disease of the pelvic organs, we should inspect with care every probable causative factor, before deciding that the entire fault is connected with the uterus or its attachments.

All are now agreed on one point, namely: that certain diseased conditions of the uterus and appendages will cause neuroses so grave in character that life is often endangered. This fact being established, general practitioners as well as specialists, should be considered extremely careless if they overlook, or fail to familiarize themselves with the histories of disturbances due to diseases of these organs.

Muscular contractions, and apparent joint affections due to para-uterine disease, especially adhesions which bind the ovaries and tubes against the pelvic fascia, are, perhaps, more common than we are accustomed to recognize. So far as my study of current literature has extended, I have failed to find anything definite regarding this factor of nervous phenomena.

Perhaps there is no special occasion to invite discussion of this phase of the subject, for it may have been mistaken diagnoses in the cases where muscular contraction of a permanent character, and apparent joint affections, have been recognized by the writer as due to pelvic disease.

The histories of the two cases which have been observed in my practice will, no doubt, enable the members of the Section on gynecology to better understand the claims of the author, than would dogmatic statements.

Mrs. F., aged 28 years, mother of two children; bed ridden for nearly one year; reduced to skin and bones; pulse 120 to 140.

Examination revealed a fixed uterus, and pelvis filled with a mass which suggested the condition of congealed wax.

The patient suffered greatly from examination. The left leg was flexed, *and immovably fixed. The left hip joint was* very tender to the touch and the patient presented every symptom of hip-joint disease. *After making my examina*tion, I was certain that the joint was free from disease. An operation to remove the diseased appendages and break up the adhesions was recommended only after stating that the prospects of recovery were doubtful and the patient might *succumb before an operation could be completed. There* was *no thought on my part that the muscular and joint* complication would be especially benefited by any operation in the pelvis.

The ovaries were buried *in the* pelvic fascia, and in removing them *there* was *much hæmorrhage.*

The inflammation had been so extensive that the ovaries, tubes and broad ligament were matted together as if they had been subjected to a white heat years before, which left them *without definite form. The uterine attachment of the* right tube was separated *in the scooping* process, *and there*fore, no ligating was done on this side.

The patient made a very slow and unsatisfactory convalescence, but within one year after the operation she had sufficiently recovered to do light house work, and the muscular and joint troubles were entirely absent.

The limb at the time of the operation was so firmly flexed that it was quite impossible to extend it *with the patient* anæsthetized, and we had to operate with the knee almost in our faces.

Case second was a girl 23 years of age, who consulted me for rheumatism, and partial paralysis of the muscles of back and lower limbs. For three years she had been gradually losing the use of her limbs and back, so that for the past year, she had not been able to walk without the use of one *crutch and a cane, or two canes.*

She could not turn in bed without first raising her body, and turning by the aid of her elbows. She could not lift her feet from the floor. She was a *constant sufferer.* She could not lie on her back on account of pain, and when she would turn on either side, there would be a dragging sensation which was anything but pleasant.

She gave a history of gonorrhœal infection contracted about four years ago. There were *symptoms of syphilis, but* no direct history, and after I had seen her a few times concluded that she had only been affected by gonorrhœa. She had been under the care of a large number of physicians, and treated for a number of diseases, among others hip-joint disease.

The limbs would sometimes become flexed, and she could not endure the suffering caused by forcing them straight. I watched *the case with much anxiety for a few weeks* before I could satisfy myself as to the cause of her deplorable *condition.* I examined her and could not find any masses in the pelvis, but there were strong adhesions of the uterus. She was tender but did not suffer greatly from the examination.

After I had examined her the third time I was almost certain that there were diseased and adherent ovaries causing all her trouble, and recommended an operation. The girl cried with joy when I informed her that an operation gave promise of great relief and perhaps permanent cure.

She wished it done immediately. I operated Oct. 31, 1891. The case was thoroughly explained before the operation, and Drs. Rogers and Sheldon examined the condition of the appendages after the incision was made. The left ovary was buried in the pelvic fascia so that it could hardly be felt, and in removing it the under surface was riddled. The tube was still patulous, and not adherent to ovary.

The entire trouble seemed to be confined to the left ovary. I removed the left appendage close to the uterus. The right side was slightly adherent, but not diseased, and after breaking up the adhesions it was allowed to remain. The patient experienced no pain, and was anxious to get up in twenty-four hours.

In one week after the operation she could turn in bed as quickly as any one, and in less than four weeks she went home, walking out of the hospital without the use of a crutch or cane.

In fact she never saw either crutch or cane after she got to the hospital. The patient works around the house from morning till night, and has been on the streets making calls.

She is as nearly a transformed person as one could wish. This young lady was married the first day of this month (June).

I know of only a few cases on record where the large joints were rendered almost useless, with partial paralysis of the muscles of the back and limbs, the result of ovarian disease and impingement. One of the latest writers on pathology of ovarian disease merely mentions the fact without giving any explanation.

In February last I did an operation on a lady 35 years of age for the removal of the diseased appendages, who had serious rheumatic trouble and an apparent shortening of one limb, with tender hip and knee joints on that side, and improvement took place at once, and has continued, but sufficient time has not elapsed to report the case as cured.

If this brief paper should provoke thorough discussion of this subject or feature of pelvic complications, the writer will be entirely satisfied.

THE INFLUENCE OF DELAYED AND INCOMPLETE OPERATIONS UPON RESULTS IN PELVIC SURGERY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, June, 1892.

BY L. S. McMURTRY, M.D.,

OF LOUISVILLE, KY.

The development of pelvic surgery is of such recent period that it has been necessary to revise and alter year by year and month by month many of its principles, and to constantly modify and improve its practical methods. A few years back there was but one operation practically known to pelvic surgery, viz.: ovariotomy. In a brief period it has grown and culminated in a brilliant and important branch of the healing art. This has been accomplished by the earnest and devoted labors of a few men, who have extended its scope, perfected its methods, and placed it upon the firm basis of scientific accuracy and practical demonstration. That this great work has been accomplished by a few persistent laborers is well known; that from the very nature of things it must remain a distinct specialty is incontrovertible.

It is doubtful if any special branch of surgical practice was ever subjected to such a severe ordeal of criticism as has been the new surgery of the pelvic organs. The older ovariotomists met with fierce denunciations constantly, and ofttimes were persecuted by their professional colleagues. The new surgery has been criticised with serious severity, and has been made the target for ridicule as well. Now, fortunately, its days of probation are completed, and it is firmly fixed in its position as perhaps the most brilliant and efficient department of surgical practice. The history of pelvic surgery during the past few years is in many respects anomalous. Attracted by the brilliant results of the few, it was eagerly seized upon by many untutored in the pathology of the pelvic organs, untrained in diagnostic resources, and unfamiliar with operative methods. That the aggregate of results should be disastrous under such circumstances is not strange. The anomalous feature of the situation is in the fact that those who misapply the principles of this new branch of surgery have been the most severe critics of the few who, laying aside all other work, strove to perfect its methods, and elevate it to a standard of safety and accuracy. In the evolution of no other special branch of surgical practice has such a rigid standard been established as the statistical method to which the results of pelvic surgery have been subjected. It may be fairly claimed now that the test has been made, and the decision rendered by the discriminating judgment of the profession. To maintain the present proud position of pelvic surgery and to elevate its standard of efficiency, it is absolutely necessary that certain advantages be utilized in the light of advancing knowledge and established facts, to perfect methods and thereby improve results. It is in view of the circumstances I have recited that this paper is undertaken, to show how the results of established operations for pelvic diseases may be disastrously affected by delayed and incomplete operations.

Inflammatory diseases of the uterine appendages compose the largest class of affections of the pelvic organs requiring surgical interference. In the early stages of the inflammatory process, palliative treatment, consisting in rest, depletion with saline purgatives, and local use of moist heat, may beget cure by resolution. When such a favorable termination is unattainable, when recurring attacks of peritonitis have begotten fixation and retention with irreparable lesions of ovaries and tubes, operation by abdominal section is the only rational means of restoration. Before the inflammatory mass has broken down in suppuration; before perforation of bowel or bladder, or rupture into the general peritoneum, have obtained, enucleation and removal are comparatively easy and safe. When treatment by palliative methods even after pus has formed is persisted in, or temporary safety is secured by puncture through the vaginal vault, every day of delay complicates and increases the difficulties of the operation for a radical cure, and also adds to the dangers of the operation. It is moreover an established pathological fact, supported by abundant clinical testimony, that secondary lesions of the kidneys and lungs often follow from prolonged suppurative changes in the uterine appendages. The depuration of the blood often hinders convalescence after successful operation, and the opium habit so frequently associated with pelvic inflammations may remain as a miserable legacy to the long-suffering patient. Intestinal complications are the most common and serious difficulties encountered in operations for inflammatory diseases of the appendages. Unless the operator is prepared to deal skilfully with a torn intestine or wounded bladder, he assumes *unwarranted* responsibility in undertaking neglected cases, for he will frequently determine the fate of patients by the manner in which he repairs these lesions. All this could be averted, dangers and complications reduced to a minimum, the patients spared prolonged suffering, and the results of treatment made complete with increased safety, by prompt resort to operation. Moreover I will endeavor to show, in the course of this paper, that delayed operations upon the inflamed appendages are very frequently incomplete, and hence are disastrous, either ending fatally at once or after prolongation of the disease.

Fibroid tumors of the uterus, or more properly, myomata of the uterus, constitute another form of intra-pelvic disease in which the disastrous results of delay are conspicuous. These tumors were formerly considered very innocent, and by many practitioners they are now treated as of trivial import. The soft myoma, prone to cystic degeneration, œdema and suppuration, is one of the most formidable and deadly conditions with which the pelvic surgeon has to deal. These tumors are almost invariably associated with disease of the Fallopian tubes and ovaries. In my latest experience with an uterine myoma, three weeks since, the rupture of the Fallopian tube on the right side flooded the entire pelvis with pus. This is not an unusual complication. Fibroid tumors produce persistent uterine hæmorrhage by which the patient is exhausted as with profound anæmia. When submitted to operation otherwise safe, these cases are often lost from the extreme anæmia which has obtained. In the early stage of these growths, before the appendages are carried behind the tumors or incorporated in the mass, the removal of the uterine appendages is a safe and efficient operation. The mortality of this operation in skilled hands is very small. It arrests hæmorrhage and, as a rule, arrests the growth of the tumor. In my own work this operation has been among the most satisfactory in its immediate and remote results. It is in connection with a consideration of this operation that Mr. Lawson Tait exclaims: "The whole of my experience in every department of abdominal surgery is one continuous outcry against delay."

Since we have learned more of the complications and possibilities of fibroid tumors of the uterus, it is known that in a considerable proportion of cases the tumor not only does not cease to grow at the menopause, but in *fact grows more rapidly after that* period. As Skene states, "*the organic forces* which maintained the menstrual function being no longer called for, are devoted to the growth of the myoma." I have done abdominal hysterectomy in one instance in which the tumor took on its most active growth after the menopause, and when the patient was in her fiftieth year the tumor had risen to the diaphragm almost. With profound anæmia, interference by pressure with the digestive functions and circulation, irritation of bladder and rectum, the patient is ill prepared to withstand any serious operative procedure. In recognition of these facts, Price, whose experience with these tumors is the largest and whose results are the best, has made a plea for early hysterectomy as did Bantock for early ovariotomy. When his plea shall have been adopted, we will witness the same improved results as obtained in response to Bantock's plea for early ovariotomy.

It would seem that the necessity for prompt resort to operation in cases of ruptured tubal pregnancy would need no argument or emphasis, in view of the deadly nature of the lesions involved. Yet we hear from time to time of a conservative method which would await the progress of symptoms and preparation of the patient and environment for operation; and the number of deaths annually from ruptured ectopic pregnancy without operation is large. Ofttimes the character of the lesion is unrecognized, but quite often death results from delayed operation. Surely no surgeon would advocate delay in dealing with a divided femoral artery. The same positive indications exist for immediate operation in cases of ruptured tubal pregnancy. The surgical rule to cut down upon and tie the bleeding vessel without a moment's delay is as applicable in one case as the other.

In studying the results of treatment of intra-pelvic disease, it will be apparent that next to delay in operating, incomplete operations are the most disastrous. It is evident that the cumulative difficulties encountered by the operator are most frequently the results of prolonged delay, as has been already indicated.

The exploratory incision is a diagnostic resource of inestimable value. It has a great field of usefulness, and the knowledge acquired by its aid, converting uncertainty into certainty, opinions into facts, is a guide to action not possible by any other means. It is apparent, however, that the limitations of the exploratory incision will be narrowed in proportion as skill in operating improves. To a certain extent almost all operations for intra-pelvic disease are in their inception exploratory. But it must be conceded that many unfinished operations are classed as exploratory. It should be our aim to carry the operation to completion in every possible case. There is an ever-present temptation to avoid the immediate dangers of a severe, difficult and prolonged operation, at the expense of the deferred but assured result of a mortal disease.

In dealing with large tumors, ovarian and uterine, in operations upon the appendages for long-standing inflammatory lesions, the *greatest difficulties* arise from adhesions. These difficulties will be greatest in neglected cases of suppurative disease of the tubes and ovaries. Here all landmarks are lost, the pelvic tissues are agglutinated and fused into an undistinguishable mass. Injury to viscera and hæmorrhage are ever-present and often inevitable dangers. These are the operations most frequently left unfinished, and if the patient recovers from the operation, it is to succumb at last to the disease. It is remarkable how long some women can live and suffer with persistent disease of this character. In one case coming under my observation the disease had been in progress fourteen years. Discharge of pus had taken place repeatedly through rectum and bladder, with only temporary relief. The entire pelvic contents were matted together, making enucleation difficult in the extreme and rendering the result imperfect. Prompt resort to operative treatment would have prevented incalculable suffering and restored the patient to perfect health.

The influence of improved diagnostic and operative skill upon the results of pelvic surgery must be apparent to every one who has watched the progress of this branch of surgery. Formerly it was quite common to observe in the reports of work by representative special surgeons that thirty or forty ligatures were applied to bleeding points; that adhesions were divided between ligatures; and that tumors and broken down tissues were left as irremovable; or that the growth was not disturbed, as it was most probably malignant, etc. With revised methods and improved skill such practice has been replaced by careful, thorough and bold enucleation. Now, by means of forci-pressure, hot water and gauze packing, hæmorrhage from severed adhesions is controlled without exposing the patient to the shock of prolonged operation under anæsthesia. With these improved methods the number of incomplete operations has diminished, and as individual skill improves and operative methods are perfected, the proportion will be still further lessened.

There is another influence which is destined to be very potent in improving results now impaired by delayed and incomplete operations. As knowledge is diffused and diagnostic skill improved, the family physician will recognize serious pelvic disease at an earlier period, and advise operation. With improved results, both the profession and the public will cease to regard peritoneal operations with the fear of the olden and mortal era, and thus delayed operations will be lessened. This should be the aim of every conscientious worker, and it is the purpose of this paper to show how essential are *promptness* and *thoroughness* in applying the advanced principles of modern pelvic surgery.

Discussion.

Dr. G. Betton Massey, Philadelphia, thought it unfortunate that these two papers were read together, as their conclusions are very different. The paper of Dr. Ashton was the result of careful work, as I well know. The paper of Dr. McMurtry seemed to be a collection of dogmatic statements based solely on his own opinion. He urged a complete operation, and said that we could not always say a woman died on account of the incompleteness of the operation. It is a little behind the times to advise the practitioner to send all his cases to the abdominal surgeon every time they have a pain in the belly. I venture the prediction that in the future serious interference with the abdominal cavity will be limited to those cases in which pus has been demonstrated to exist in the pelvis. He wished to call attention to the ease with which a powerful electric light could be enclosed in a series of test tubes, one inside of the other according to the amount of heat. This can be inserted into the vagina and will light up the pelvic cavity. This light will penetrate a cyst, but will not penetrate a collection of pus, which is a means of diagnosis of the presence of pus. This light will penetrate living bone even better. We can notice light shining through our fingers on holding them up before a bright light.

Dr. R. B. Hall, Cincinnati, thought it impossible to determine the presence of pus in all cases, and that the prediction of Dr. Massey would not hold, and that this would be dangerous doctrine to promulgate. The doctor reported a case in point.

Dr. Joseph Tabor Johnson, Washington, D. C., thought the papers read, and others which have been recently published, teach us that we are not thorough enough in our operating.

Dr. Franklin H. Martin, Chicago, thought the paper of Dr. Ashton taught us how to avoid trouble. We should give much care to the treatment of raw surfaces in the intestine. These surfaces will readily take on adhesions. These should be covered with peritoneum if possible, otherwise covered with an omental graft. Stumps should be covered with peritoneum, which will also prevent attachments. Saline treatment is very important. In the Woman's Hospital at Chicago we endeavor to get a passage of fæces or gases during the first twelve hours.

Dr. Edwin Ricketts, Cincinnati, has had much benefit from the administration of strychnia in large doses in intestinal paresis. A case which he recently had looked very much like peritonitis, but after the administration of strychnia a large quantity of gas was discharged. The speaker could not agree with Dr. Martin as to the danger of adhesions resulting from the stump. Such had not been his experience.

Dr. W. E. B. Davis, Birmingham, Ala., did not think abrasions had such an influence on the causation of adhesions as claimed. Purgation twenty-four or thirty-six hours after operation will not break up adhesions. It should be done earlier. He considered it very important that the bowels be returned within the abdomen during the operation. In fibroids it is the adhesions which give symptoms, and it is unjust to blame these on the electrician.

Dr. E. P. Davis, Philadelphia, said the pathology of the peritoneum was a very important feature. Different portions of peritoneum have different powers of resistance. Iodoform seems to be least irritating to the peritoneum, next boracic acid. It is known that the peritoneum of dogs is different from that of the human being.

Dr. W. E. Ashton, Philadelphia: Obstructions are not always due to faulty technique; sometimes to inflammation which could not be prevented. Taking a graft from the omentum only made a point where the gut might pass through. Strychnia has been followed with very good results. I give one-fifteenth to one-tenth grain three or four days before and after section. It increases peristaltic action of bowels, clears them of fæces and lessens the danger of intestinal paresis.

Dr. L. S. McMurtry, Louisville, in reply to criticism, said that the observations and deductions made in his paper were based upon his personal experience in pelvic surgery, and were fortified by illustrative cases. He deprecated resort to operation in doubtful cases, and advocated most careful discrimination in deciding the question of operation in all cases; but he believed it equally an error to delay operation in clearly defined conditions requiring operation until the patient's chances of recovery are reduced or lost. Of course, there must be a restriction on early operation in fibroid tumors in accordance with the rapidity of growth and amount of hæmorrhage. When these conditions clearly point to the necessity for operative interference, the sooner it is done the better. When resorted to early, the appendages may be removed and the growth, as a rule, will be arrested and hæmorrhage cease. If hysterectomy is rendered necessary, the sooner it is done the safer it is for the patient. It has been demonstrated that electricity is a failure in the treatment of uterine myomata; and while these tumors sometimes disappear at the menopause, or sooner, without treatment, they often grow in spite of the menopause and treatment, and unless removed destroy the patient's life.

COLPO-PERINEORRHAPHY.

Read in the Section of Obstetrics and Diseases of Women, at the forty-third Annual Meeting of the American Medical Association, held at Detroit, June, 1892.

BY EDWARD W. JENKS, M.D.,
OF DETROIT.

INTRODUCTION.

In 1877, I read a paper before the Michigan State Medical Society in which were mentioned "some new procedures in the operation for laceration of the perineum" and Jan. 8, 1879, I read a paper before the Cincinnati Obstetrical Society, which was published in the *American Journal of Obstetrics*, for April, 1879, describing the same procedure as in the first mentioned article, the latter being entitled "Perineorrhaphy and a Description of a New Mode of Operating." This paper advocated a new mode of submucous dissection of the tissues or what is now designated flap-splitting.

This mode of operating was favorably commented upon by the leading medical journals of the day and the leading text books on gynecology published in this country continued for many years to sanction it. In that paper the cutting away of the flap instead of preserving it was advised. Subsequently I preserved the flap, and believing for a time my mode of operating as well as the preservation of the flap was original, so stated when asked regarding it by some of my friends, notably the president of this Association (Dr. Marcy), who mentioned the matter in one of his publications. But learning that others had also described saving the flap no claim has been made as to its originality with myself. The submucous dissection I described, or flap-splitting operation as now designated, was made several hundreds of times by me in public clinics, as well as by many others who had adopted it, some years before the flap-splitting operation of Tait or others had become known.

However, I *am not strenuous in claiming priority* in the mode of operating I described so long ago, as it is of little importance, for I am only one of the great multitude working in the field of gynecological surgery.

I am prompted to this historical fact as an introduction to this paper as the surgical procedures I made known fifteen years ago are occasionally referred to at the present time; and a late edition of a well known text book that had previously commended it by means of lengthy quotations and illustrations now dismisses it by a brief allusion as "too bloody."

Although repeatedly asked to write an additional paper I have had other fields to cultivate, and what seemed more important in surgical matters to engross my time and attention, but of late there seems to have been a revival of interest in plastic gynecological surgery.

DESCRIPTION.

The operation I make to-day and which is described in this brief paper is, I believe, a great improvement on my former method. It would hardly be possible for one to make hundreds of operations of any kind without finding a chance for some improvement either in the mechanical portion or in results obtained.

Of the surgical devices before the medical public known under the general title of perineorrhaphy the name is legion, consequently the merits or demerits of other operations than the one here described will not be considered.

It is not my purpose to discuss laceration of the perineum or the necessity for repair in detail. It is well known to every careful observer that rather extensive laceration of the perineum and vaginal walls occur in childbirth from which no bad results follow. Again it is equally well known that many discomforts and divers reflex symptoms often ensue from lacerations that at the time of their occurrence seem too insignificant to demand a passing thought or even a single suture.

It is to the consideration of secondary operations alone that your attention is called. I will state as a general proposition that operations are not demanded because of laceration *per se*, but when there are unmistakable discomforts that can be plainly traced to them, and health and comfort can only be recovered by restoring the torn parts to their normal relations.

The portion of the recto-vaginal septum known as the perineum supports the lower portion of the posterior vaginal wall, which in turn supports a corresponding part of the anterior vaginal wall. The lower portion of the rectum is sustained and the proper performance of its functions aided by the perineum. Four muscles, the levator ani, sphincter ani, transversus perinei and bulbo-cavernosus are here united; and it is the severance of these from their fellows on the opposite side together with the separation of the perineal fascia which produces the mischief, therefore laceration of the perineum and a portion of the posterior vaginal wall, whether partial or complete, may cause a variety of conditions, such as loss of vulvar integrity and impairment of the functions of the rectum, partial or complete incontinence of the rectum and bladder, increased and irritating secretions of the vagina and rectum and recurring prolapse of the rectum after operation for prolapsus recti, descent of the recto-vaginal septum or rectocele, a similar condition of the anterior vaginal wall and bladder or cystocele, and descent of the rectum. There are also various neurotic and sympathetic disorders which it is needless at this time to dwell upon.

I have seen quite a number of patients that had been operated upon with the result of having, to all external appearance, a perfect perineum but with a rectocele above the line of the dissection or flap-splitting that formed an excellent pocket for the accumulation of uterine and vaginal secretions, in which the neck of the prolapsed uterus was constantly macerating. In many of the cases where only a portion of the redundancy is remedied the only benefit seems to be, to provide a better support for some form of pessary to sustain the uterus and vaginal walls.

My own observation and experience, which I presume agrees with others, is that there are, at least in a general sense, four important ends to be attained in repairing the class of injuries under consideration: 1. To restore the loss of power and function to the lower portion of the rectum and vagina. 2. To restore the normal sustaining quality of the posterior vaginal wall for the anterior vaginal wall and bladder. 3. To provide as much support for the uterus as the perineum naturally gives. 4. To cure the many distressing nervous accompaniments.

Any surgical procedure which does not obtain such results to a great degree is not in a strict sense successful.

A perineum may be operated upon and, as far as external appearances are concerned, is successful, but if above the point of dissection there still remains a redundancy of the vaginal walls, or the restoration is not sufficient to support the anterior vaginal wall the operation is but partially successful. This is true whether the uterus is held up to the health line or not. There are so many causes operating to produce uterine displacement, that it is not as a general rule just to guage the success of an operation by the measure of uterine support it secures. For the reason that these partial operations are often insufficient and are not followed by the anticipated beneficial results, I have chosen to designate the surgical procedure I have been making for a number of years, colpo-perineorrhaphy. To accomplish the best permanent results it is essential that dissection of the flap extend as high within the recto-vaginal septum as there are signs of slack or redundancy of the posterior vaginal wall.

My mode of procedure is as follows: I first nick with the scissors each labium to mark either termination of the anterior margin of the flap and then, having introduced two fingers into the rectum and assistants making the parts taut, I insert the sharp pointed scissors near the juncture of the integument and mucous membrane in the median line or sometimes on one of the nicked lips and proceed to dissect a flap up the septum as far as redundancy of the walls can be observed. (Fig. 3.) It is important for the sake of making a more rapid and neat operation that the dissection be made in its entirety without withdrawing the scissors. When I first described my mode of operating in 1877, my friend, the late Dr. Albert H. Smith, devised a knife to take the place of scissors and subsequently I caused a knife to be made larger and more flexible than his. (See Fig. 1.)

The scissors which I have used for the past five years are slightly curved with blades completely overlapping each other, and both inner and outer edges ground equally sharp. I have found this form of blade is less liable to become entangled in submucous dissections than the ordinary shaped blade. (See Fig. 2.) These scissors can be used alternately in their proper capacity or with blades closed as a knife to dissect the flap more perfectly, as their sharpened outer edges and points render this an easy task, and there is a great advantage in their use in cases where there is much bleeding, as there is less hæmorrhage than with an ordinary knife.

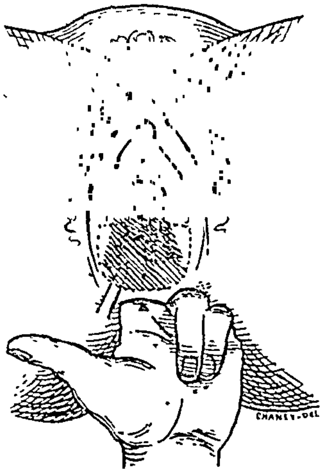


Figure 3.

Fig 1.

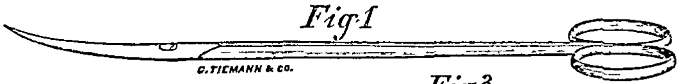
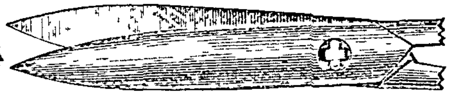
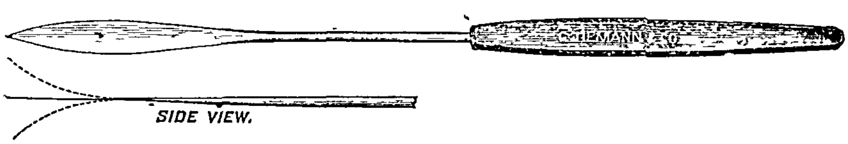


Fig 2.

Fig 3.





One objection recently made to this operation is that it is bloody and sometimes one or more arteries have to be tied.

To my mind, if that is the case, the surgeon of the present day is not intimidated by a few small spouting vessels and if such a calamity occurs it is quickly and easily remedied.

In many hundreds of operations I have not been compelled to ligate vessels, all told, more than six times.

The next important step in the operation after the dissection of the flap is the insertion and adjustment of the sutures. I was led many years ago to adopt the method of the late Dr. Agnew of Philadelphia, in placing sutures in the perineum. Since then I have carried them deeper, higher and in somewhat different directions; still I do not claim any originality in this matter and wish the credit to be given to whom it is due.

No better results have ever been obtained than by silver sutures, but on account of their stiffness they cause more pain, therefore, in extremely sensitive patients I substitute the silk-worm gut, which possesses *the principal advantages of silver wire and is* not so unyielding. Kangaroo tendon is also a safe and useful suture, as its time of continuity is from *fifteen to twenty days.*

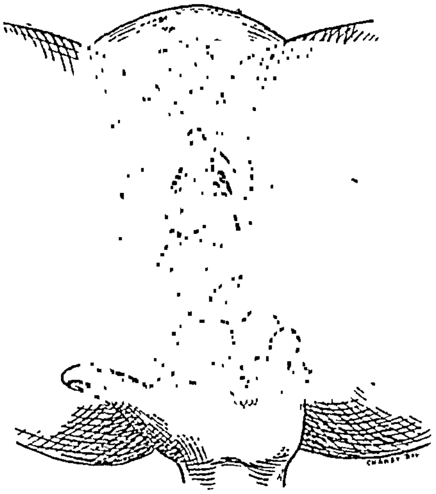


Figure 4.

The needles are a straight, flat non-cutting needle about two inches in length and a slightly curved Peaslee needle.

The latter is provided with a carrying thread which is number 4 or 5 braided silk about eighteen inches long. The former is used only for the short and superficial sutures which are threaded directly into the needle.

In the majority of methods of operating for incomplete laceration, the first and frequently the second sutures are shorter and of far less importance than the third or fourth, or fourth and fifth, as the case may be. But in my operation matters are reversed, for the first two sutures are the longest and most important. Indeed, for want of a better term I often call them *the parent stitches.* (Fig. 6.)

The first assistant lifts up the flap by means of a tenaculum hooked into the edge at the center. (Fig. 4.) Introducing two fingers of the left hand into the rectum to guard against wounding it, I start the needle in at the distance of one-third to one-half inch back from the denuded surface, and turning the point well toward the left buttock and the handle correspondingly as far in the direction of right buttock, I push it rather deeply into the tissue of the anterior ischio-rectal space, then upwards and finally inwards along recto-vaginal wall until it has been carried just above the highest point of dissection in the center, at which location or as near to it as possible the needle-point is brought out. When the point is about to come through, if counter-pressure is made with a blunt hook, the needle can be pushed through more easily, with less strain upon the septum and with less likelihood of pricking the anterior wall by the sudden emergence of the needle than without its use. As soon as the eye appears a loop of the carrying thread is pulled out by a tenaculum and the suture passed through it. When the needle is withdrawn one half of the first stitch will be *in situ*.

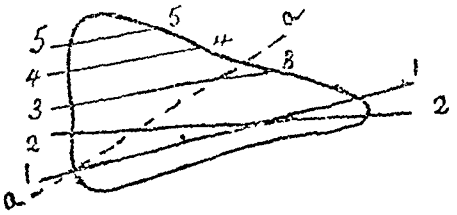


Figure 5.

The needle in then introduced in the same manner in the opposite side, the upper end of the suture threaded into the loop and the other half of the stitch carried to place.

For the second stitch the needle is started in about a third of an inch above the first and its point directed at first outward in the same manner as in the introduction of the first suture. Not quite so much lateral tissue is taken up this time, that is, the needle does not make quite so wide a side sweep for the second suture but passes more directly up along the recto-vaginal septum and when it has reached the upper third of its course, *crosses* the first suture and comes out on the vaginal mucous membrane about one-half or two-thirds of an inch above the central highest point of dissection. After drawing the first half of the suture into place the needle is introduced in the same manner on the opposite side for the second half of this stitch.

For the third stitch, a third of an inch above the second, the needle passes along the denuded surface till it reaches the line of junction of the septum and the flap, when it enters the latter at about its upper fourth, burrows across to the opposite side and down the denuded surface to the outside.

This stitch can sometimes be introduced in one continuous circuit, in other cases one-half at a time.

The fourth and fifth stitches are buried under the denuded surface as far up as the junction of the septum and flap where they pass under the flap without burrowing in it to the opposite side. With each of these sutures it is usually more convenient, although not necessary, to put in one-half and then introduce the needle on the opposite side in the same manner for the other half.

The ends of the sutures are now placed together and traction enough made upon them to determine whether the denuded parts are coming properly into apposition. At this time the flap will emerge more or less from the introitus and will frequently have the appearance of being much too long; the operator will consequently be tempted to pare off a quarter of an inch or more from the anterior edge, but this should not be done except in rare cases of great redundancy. This slack is disposed of by the gradual retraction of the flap during the process of healing and settling into normal relations. The sutures are now loosened again and the sixth stitch introduced which is designed to purse up the anterior side of the flap and also bring together the last of the denuded surface. For this purpose the straight thin needle previously mentioned is used. The needle is passed under the portion of denuded surface contiguous to the edge of the flap and thence into and through the latter to the opposite side. All the sutures are now picked up and slackened enough to allow the flap to be raised in order to clear out by the douche any clots that may have collected.

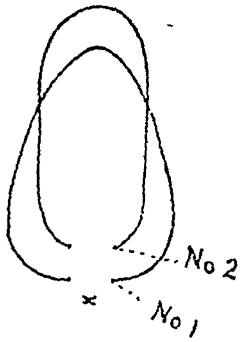


Figure 6.

The sutures are then all drawn up ready for fastening.

If silver wire has been used each suture is carefully shouldered and twisted. If silkworm gut has been employed the sutures may be either tied or secured by perforated shot.

Care is required in adjusting the first two long sutures not to draw them too tightly, otherwise they will cut in a little, and owing to their including so much tissue adjacent to the rectum, will be painful. The third, fourth and fifth sutures can be drawn more tightly. The sixth, again, should be but moderately tight, as the pursed up edge of the flap will not bear too much constriction.

Usually two or three superficial sutures of fine silk, horse hair or small silkworm gut will be required to coapt any raw edges turned out by the puckering up of the flap.

In case there seems to be any liability of hæmorrhage beneath the flap I place a strong silk suture by means of a Peaslee needle outside of the adjusted sutures and over the flap, which I retain for about twenty-four hours and then remove. (Fig. 5, *a*.)

These last are not absolutely essential but they give a neat appearance to the operation as well as dispose of surfaces for absorption or granulation. If silver wire has been used the ends may be massed together and inserted into half an inch of small rubber tubing to prevent them from pricking the patient.

In any surgical work, but especially in the plastic operations of gynecology, it is extremely convenient and helpful to an operator if he is ambidextrous. However, but few possess this accomplishment to a full degree and it is not really a *sine qui non* to skilful operating. Many expert operators do not interchange much the work of the two hands in the use of the knife, scissors and needle.

In this operation or almost any other for perineorrhaphy, the long stitch or stitches which pass from the outside up to the highest point of dissection in the vagina should always be put in one half at a time. If the dissection is made even approximately as high as it should be, a slightly curved needle cannot make the whole circuit at once, except in a patient with lax tissues and a broad space between the tubera ischiorum.

But even when it can be done it is accomplished at the expense of considerable strain upon the parts operated upon and the whole vaginal column.

I have constantly mentioned six as the number of sutures employed, but only because that is the number most commonly required. Occasionally five are sufficient, and sometimes seven or eight are needed.

As there are no exposed raw surfaces either externally or internally, but little dressing of any kind, and but few vaginal douches are demanded. Three or four are the usual number; one at the end of thirty-six hours, another on the fourth or fifth day, and another on the morning of the day the stitches are removed, usually the seventh. The external parts on the other hand, require about the same attention as in other perineal operations. Night and morning, and each time after urinating the soft parts adjacent to the line of union, and also the buttocks are carefully separated and the wound and the surrounding parts gently irrigated with sterilized water or a one to six thousand solution of bichloride.

The surgical procedure which I have here described under the name of colpo-perineorrhaphy, cannot commend itself on account of the consummate ease or rapidity in which it can be made. It is not as easily or quickly done as ordinary perineorrhaphy, nor even as the flap-splitting operation of which so much has been written of late.

But after essaying different operations from Baker Brown's to many of the present day, I have settled upon the method I have here briefly outlined as the best one I can make for the great majority of cases that present themselves to me for treatment.

In conclusion there are a few points to which I wish to direct attention.

1. Any single mode of operating is not adapted to every case of laceration of the perineum.
2. All other qualifications being equal that surgeon will be the most successful in this class of operations, who, instead of following hard and fast rules, possesses a mechanical skill which he can adapt to the peculiarities of each individual case.
3. The subsequent comfort of patients is not facilitated by superabundance of cicatrical tissue within the vagina; therefore the anterior wall, instead of being subjected to any surgical procedure for redundancy should be sustained by a restoration of the normal posterior wall.
4. The surgical operation here advocated has for its object, a restoration of the torn posterior vaginal wall and perineum to its normal condition, whereby there is afforded (*a*) support for the uterus to the full extent provided for in the vaginal walls; (*b*) support for the anterior vaginal wall and bladder; (*c*) support for the lower end of the rectum.

84 Lafayette Avenue.

THE American Microscopical Association will meet in Rochester, N. Y., August 9, and not August 10, as heretofore announced.

OVARIOTOMY IN THE PRESENCE OF PREGNANCY.

Read before the Section of Gynecology and Obstetrics, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June, 1892.

BY WILLIAM H. MYERS, M.D.,

OF FORT WAYNE, IND.

Seventy-six (76) years have elapsed since Recamier presented to the medical world the uterine speculum, and the dark age of uterine pathology was passed and a new era begun.

As in history, we progress by alternation, by conflict and by revolution, so were these the steps in medicine and surgery by which we have attained the advanced thought of to-day.

From 1816 to the present, a wide range of material has been submitted; brilliant at the time, but existing now as the residue, as merely a trace of a previous pathology.

Recamier taught that the primary element of uterine disease was inflammation and ulceration; Bennet, ulceration of the cervix; Tyler Smith, hyper-secretion of the mucus glands of the cervix; Meigs, retro-version; Velpeau, flexion; Lisfranc, congestion and engorgement of the cervix; Madame Bovine, uterine catarrh; Grailly Hewitt believes that all the ills of woman are due to uterine displacement; Tilt, ovarian peritonitis. I might in this connection refer to the labors of Goupil and Bernitz in pelvia peritonitis; for they were the first to teach us a correct pathology of this condition, and the secondary importance of cellulitis. We of the present accept with the greatest facility the doctrine that the peritoneum and the ovaries are the structures underlying nearly all of the phenomena presented in uterine disease, and we relegate cellulitis. The truth of this doctrine opened the field of intra-peritoneal operations, and ovariotomy, according to a recent writer, passed through three successive periods, a period of groping, ending with the successful work of W. L. Atlee, Baker Brown and Sir Spencer Wells; second, a short period of excessive specialization; and third, a period of popular adoption deriving its impulse from the introduction of antiseptics.

The treatment of ovarian cysts has been settled, but the presence of an ovarian cyst during pregnancy presents questions for our consideration. The doctrine advanced may be thus enumerated:

1. Non-interference.
2. Puncture of the cyst.
3. Induction of premature labor.
4. Porro's operation.
5. Ovariotomy.

In regard to the question of non-interference, in the light of modern surgery, we dare not entertain it, for the dangers of axial rotation of the tumor, rupture of the cyst, of impeded labor, rupture of the vagina during labor, far outweigh the dangers of the removal of an ovarian tumor. The exceptional cases reported, where pregnancy has coexisted with an ovarian tumor, and the woman has passed safely through confinement, are too few to be accepted as a precedent; for in a large proportion of cases, if the tumor be large, abortion will occur; if not, a lingering labor and still-born child will be the result, and the danger of sudden death be ever impending. In a paper by Doctor Playfair, published in the ninth volume of the Obstetrical Transactions, he reports thirteen (13) cases left to nature; seven (7) recovered and six (6) died. Spencer Wells enumerates three (3) cases where death followed the spontaneous rupture of an ovarian cyst in the sixth or seventh month. Doctor Barnes has seen one (1) case where death followed rupture of the cyst. In another case, the patient at last had peritonitis and died. Rokitausky refers to similar cases. I believe the almost unanimous opinion of the medical profession to be, that it is not safe to allow an ovarian tumor to progress without interference in the presence of pregnancy.

Puncture of the cyst, I believe, ought only to be resorted to where the cyst is simple and an operation for its removal would be impossible, as when called to the patient during labor. An ovarian cyst is more dangerous during pregnancy than at any other time, and that it will relieve the distension with a very slight risk to the mother, unless ovarian fluid should escape into the peritoneal cavity, or air enter into the peritoneal and into the cavity of the cyst. He also informs us that the cyst must be single, and if multilocular, tapping can be of little use.

I will here admit that there is no steadier brain in the medical profession than Sir Spencer Wells', equally at home in generalizations and in details. It is not my purpose to enter into any detailed criticism of his opinions, but we will refer to conflicting authority in subverting the view that "tapping will bring only a slight risk to the mother." In 1869 Thomas Nunnelly, of Leeds, England, delivered an address in which he stated, "in our infirmary of the last thirty-eight (38) cases of paracentesis for ovarian disease, ten (10) ended fatally." Stilling tells us that no surgeon should ever puncture an ovarian cyst. Storer says, "Never tap an ovarian cyst. It is a crime." If I were asked the question, "why not?" my reply would be, "after its adhesions form, it is useless and never cures." Charles Clay of Manchester, considers it useless, dangerous and to be followed only by evil. In a case of ovarian tumor, unilocular, that came under my own observation, tapping was resorted to in my absence and the patient died of peritonitis on the fourth day. Pozzi uses the following language: "Puncture is only to be resorted to when it is absolutely impossible to operate on the cyst." One of our latest authors, Bland Sutton, in speaking of paracentesis and of its several risks, says, "If air be admitted into the cyst during the procedure, or the instrument be septic from want of care and cleanliness; or if the fluid leak into the peritoneal cavity, and should it possess irritating qualities, inflammation and suppuration followed by fatal peritonitis may be the consequence. If these results follow the puncturing of an ovarian cyst in the absence of pregnancy, how much more likely to occur if complicated with pregnancy.

Induction of premature labor.—In 1869 this was advocated by Doctor Ruth, of London. Doctor Barnes had often met this complication by inducing premature labor, for the reason, he claimed, that nature could not tolerate the double uterus and a growing ovarian tumor. These opinions were expressed in in the Obstetrical Society of London in 1869, and at the close of the discussion, the President remarked that the sentiment was in favor of inducing premature labor. I may here state that the prevailing opinion now is that the induction of premature labor places the mother's life in peril and implies the sacrifice of the child.

Ovariotomy.—Tait states the accepted doctrine to be to perform ovariotomy and let the pregnancy alone. I believe this teaching to be good and the practice worthy of adoption. If the question were to be settled by statistics alone, I might refer to Olhausen; up to 1885 Schroeder had performed ovariotomy during pregnancy in twelve cases, Sir Spencer Wells in ten (10), Olhausen in eight (8), Tait in six (6). In only one of these thirty-six cases did the patient die. In this connection I will refer to Sir Spencer Wells' cases and the results to the mothers and the products of conception. Four (4) were operated upon at the third month; all the mothers recovered and pregnancy only interrupted in one case; three (3) were operated upon at the fourth month; mothers and children all did well; three (3) were operated upon at the sixth and seventh months: one woman died five days after the operation, one child born twenty-two days after the operation, one fœtus expelled nine hours after the operation, and one child born one day after the operation.

Where shall we interfere? There is a time in most cases when the balance of circumstances is favorable to operations, on the side of the patient. With a rapidly enlarging tumor and with pregnancy advancing it is easy to lose the golden opportunity by delay.

"That gentle physic given in time had cured me,
But now, I am past all comfort here, but prayers."

In 1872 Peaslee wrote: "If we delay until the health is somewhat impaired, we diminish the risk of peritonitis, which destroys one-fourth of all who die after the operation. This opinion was endorsed by Atlee, Bradford, Tyler Smith and Erickson. With this doctrine Peasley imbued the whole professional mind of America. He followed this practice, had seventy-eight (78) ovariotomies with thirty-nine (39) deaths.

We emerged from this doctrine in 1884. On a former occasion while reviewing this doctrine, I said that the time has gone by when we believe that the peritoneum has become more tolerent of injury and less liable to inflammation, when "The eye doth lose its lustre, and like the world's great warrior, the woman cries, 'Give me some drink, Titinius, as a sick girl.'"

Not often can an important doctrine gain immediate acceptance, but more likely the mental evolution necessary to establish, to recast old views and lead to new practice will be of slow development. "It often takes twenty years for the old people to make up their minds to leave the old farm."

The doctrine taught by Bantock, of London, with regard to early operation is as true in the presence of pregnancy as in its absence when he asserts, "I would urge then with all the force that the strongest conviction imparts that ovariotomy should be performed as soon as we can be sure of the diagnosis." This teaching is in accord with the first principle of scientific surgery. We inculcate the doctrine of early removal of calculi in the bladder, gall-stones in the cystic duct, and renal calculi, for the reason that there is no tendency to spontaneous cure and the surgical procedure becomes a necessity. In favor of ovariotomy in the early months of gestation we have this to say: The prognosis will depend largely upon whether the case is a simple or complicated one, the presence or absence of adhesions, and the length of time occupied during the operation. That the existence of adhesions greatly interferes with the success of the operation has been proven by Bantock, by referring to one thousand cases in Mr. Wells' practice. Adhesions, 599 cases, 165 deaths, 27 per cent. No adhesions, 401 cases, 68 deaths, 16 per cent. In his own practice, in one hundred eighty-five cases: Adhesions, 125 cases, 25 deaths; no adhesions, 60 cases, 3 deaths.

The Case.—In 1883, Mrs. B,, residing in Angola, Indiana, at the age of 17, was afflicted with a severe attackof scarlatina; sequelæ, ascites anasarca. Recovering from this, she was married December 24, 1889, pregnancy discovered in May, 1890. In September, 1890, she suffered intense pain in the lower part of the abdomen, depriving her of rest; she was unable to lie down at night. She was enlarging rapidly and with it her distress increased. She would not consult a physician, being a firm believer in the so-called Christian Science. `She at last felt compelled to consult a physician. Dr. Waller of Angola was called, and his diagnosis was pregnancy complicated by ovarian tumor. He requested me to visit the case with him, and I saw her October 1, 1890, and verified the diagnosis of Dr. Waller. We urged upon her the necessity of an operation. She gave her consent and we operated upon her October 5, 1890. After the usual aseptic precautions, an incision in the median line three inches in length disclosed an ovarian tumor on the right side, pushed up by the enlarging uterus. It had a broad pedicle, and it was in axial rotation. The physiological development was easily defined from the pathological by the difference in color. The tumor was multi-locular, weight of cyst and fluid contents probably ten pounds. The few adhesions were easily broken up by sponge pressure after the cyst was emptied. The pedicle was then transfixed and ligated by silk thread, and the cyst removed. The abdominal cavity was carefully washed out with warm water, a drainage tube inserted, after which the wound was closed and dressed in the usual manner, and the patient placed in bed. The shock was not severe, although she was restless for a few days, without alteration of temperature. October 12, uterine pains came on and the fœtus was expelled on the 16th without much suffering. This was followed by rise of temperature 102 degrees, chilly sensations. The local douche of hot water carbolized was resorted to twice in twenty-four hours. After the twentieth day from the operation, progress was satisfactory, and she is now enjoying excellent health.

In conclusion, gentlemen, the diversity of opinion concerning the treatment can easily be explained. The obstetrician regards premature labor with the greatest favor, the gynecologist abdominal section. From the latter, we receive innumerable instructions from time to time, a profusion of counsels under the sway of theoretical ideas. Success depends only upon a question of material; the personality of the surgeon is effaced, and if he works in a costly furnished room and with very expensive pieces of dressing, he can practice modern surgery and must succeed. Now I regard this as a dangerous doctrine that effaces the surgeon behind a question of material. Antiseptic surgery is governed by questions of material. To practice it successfully demands all the science of former days, more ideas and qualities unknown to our predecessors. Possessing these, the surgeon must be able to practice everywhere, and his success will increase in a direct ratio with his experience, and that is independent of antiseptics, but mainly governed by habits of cleanliness and fertility of operative resources that come by experience. John Homan says: "in regard to hysterectomy, I performed the operation much better than I did years ago, and my last cases nearly all recovered." Thomas Keith, speaking of his supra-vaginal hysterectomies, says: "Without the experience that ovariotomy has given me, I shrink from thinking what the mortality might have been."

AMERICAN MEDICAL ASSOCIATION.

SECTION OF PRACTICE OF MEDICINE.

First Day—Tuesday, June 7.

Isaac E. Atkinson, M.D., Chairman *pro tem;* James M. French, M.D., Secretary.

The proceedings of the Section were opened with an address by Dr. R. T. Edes, Chairman of the Section, read, in the absence of Dr. Edes, by Dr. E. P. Gerry. The title of the address was:

RELATIONS OF BACTERIO-CHEMICAL RESULTS TO PROPHYLAXIS AND THERAPEUTICS.

In opening the meeting of this important section, it is appropriate, as well as in accordance with the regulations of the Association, that some general remarks should be made in the nature of a recapitulation of recent advances in our science and art; a stepping aside, for a few moments, from among the bustle and hurry of practical work with its infinity of details, its confusion and worry; a looking over the field of battle from the outside; an orientation and correction of the compasses for a fresh start; or, as our commercial friends would say, taking account of stock for another year's business.

It is manifestly impossible, in the forty minutes wisely assigned as the maximum limit of time for these remarks, even to mention in *detail* all the important observations that have been made within the past year. Clinical observers and laboratory workers have all been busy in enriching our knowledge of almost every department of biological science. The task of recording and harmoniously arranging these must be divided up among many specialists and placed where they can be intelligently utilized by the busy practitioner.

I shall, then, only attempt, briefly, to advert to some of the special points in which it seems to me that scientific work is most fruitful not only of pure knowledge, but of practical application; and is most likely to lead far into the regions, at present unknown and unexplored.

If we find that much of the present accurate scientific knowledge has been preceded by theory and vague presagings, that practice has sometimes been right before theory could exactly say why, it is no new thing.

Our perception of the value of hints and suspicions is wonderfully quickened when it is found by the careful worker that some of the thousands of guesses emitted have really hit the mark.

The birth of a new science, or at least, of the perfection of methods of research so distinctly separated off from all former ones as to call for its own laboratories, its own specially skilled workers, and which give us a kind of result hitherto unknown, is, to be sure, not an event of the last year but recent enough to be well within the memory of young men.

Bacteriology, the recognition of specific growths, not only by their form as revealed by the microscope, but by their behavior, their habits of growth, as we know from a distance a grove of pine trees from oaks or apples long before we can identify them by their botanical characters, is, undoubtedly, both in medicine and surgery, the most path-making of modern discoveries.

While it is true, that in both great departments of the healing art there have been, for years, dim p sagings and theorizings of a germ theory, yet it is equally true that it is only recently that the various procedures, simple enough in themselves, have been systematized into a coherent and practically working whole, that consistent, definite, exact results have been brought about.

The surgeons can tell us that antiseptic surgery, as an art, began before bacteriology attained its position as an exact science; but, they will also say that the growth of both science and art has been going on in parallel lines, each confirming and improving the other.

And, in medicine, I think we may find that some of the older and less exact observations receive an explanation and are made more definite and decisive by the recent discoveries of bacteriology and organic chemistry.

The most beneficent of all specific forms of prophylaxis, that of variola was, as we all know, the result of a chance observation utilized by a careful and scientific mind entirely without the assistance of any modern instrument of precision except that one, without which all other laboratory apparatus is useless, the level head.

This single and signal success has been the stimulus to numberless attempts to imitate it in regard to other diseases of the same class, and will continue to inspire them until, with the assistance of the studies made more recently, success will be attained.

Close alongside of this study has come that of the organic substances, chiefly poisons, which is doing so much to enlighten our medical pathology, and which has received no slight impulse at the hands of the Chairman of this Section at last year's meeting.

The theory of autogenetic poisons, again, is not new. It is, perhaps, as old as medicine itself; but, when we are able to get the poison into the test tube and recognize its behavior with various reagents, we have assuredly advanced a most important step in our pathological knowledge.

The retention of various well known products has been long suspected as the cause of symptoms.

Bile must have been so as long as physicians have been aware of jaundice and its relation to the liver.

Urea has been tried and acquitted as harmless.

Uric acid is on trial, and evidence enough to convict it of a host of misdemeanors and, perhaps, crime is forthcoming.

But it is probable that we have yet to detect more guilty and better hidden criminals before we get at the real cause of uremic poisoning.

Fever is not, improbably, the effect of a poison, generated by inflammation, or by infection, which paralyzes the heat regulating centres. Whether the resulting rise of temperature is an effort of nature to counteract and neutralize the poison is a suggestion; but as yet, only a suggestion.

In cases of diphtheria a poison has been extracted from the membranes in two forms, an alkaloid and a poisonous albumen.

Similar poisons may be found in the blood; and, it is probable, that, in addition to the penetration of those formed in the membrane, renewed and continued formation may take place there under the influence of a special ferment. But the bacteria themselves do not go beyond the infected surfaces. All this has nothing in it startling to the clinician. It harmonizes with the views acquired by clinical observation, but it is a nearer and clearer view of what was before seen in clouds and uncertainty.

While we are bringing these accusations against the various pathogenic microbes let us, by the way, and as a digression, put in a plea of mitigation of damages.

It is not at all certain that many of the natural and physiological fermentations may *not* take place under the influence of bacteria.

Sterilized milk does not appear to contribute so actively to nutrition as in its natural state. It is, of course, less likely to carry disease; but, if it fails to carry health and strength, this negative merit is more than off set.

An extremely interesting series of observations has been made within a few years in regard to the appropriation of nitrogen from the air by plants.

It has always been supposed that vegetables derived their nitrogenous constituents from the decomposition of organic material in the soil or, if at all from the atmosphere, only indirectly and by way of ammonia.

It has been found, however, that some plants, among those actually experimented upon, the bean family in particular, are capable of growing in a soil absolutely free from nitrogen and of forming the usual nitrogenous compounds; thus, of necessity, deriving the necessary elements from the air. The power to do this is closely proportionate to the number of little tubercles or nodules found upon the minute rootlets of the plant, and these again, are dependent on the presence of a peculiar bacillus.

Thus, these lowly organisms that we regard almost wholly as pathogenic, control the first step in the process by which the vast stores of nitrogen in the atmosphere are transformed first into the albumen of the bean, and then, through this humble but intellectual instrumentality, into the highest cerebral tissue. So we must not condemn the whole family on account of the vicious habits of some of its representatives.

Among the most interesting of the secondary series of investigations which have grown from the original bacterio-chemical researches is to be placed that relating to immunity, showing under what circumstances and by what means the system is protected against infection.

It has been shown that the resistance to the invasion of a specific infecting bacillus is largely dependent upon the blood, although this by no means proves that the solids of the body may not have a share therein.

But the strife has waxed hot between those who think that infecting microbes are rendered harmless by the blood germs which may have attained peculiar qualities, or that they are swallowed by the leucocytes and thus arrested in their career of destructiveness.

Although the weight of opinion appears to be with the latter party yet there is no real reason why both constituents of the blood might not be active in the defense of the system.

This branch of the subject is as yet so very recent and so little settled that it will, undoubtedly, undergo modifications before becoming an integral part of acquired knowledge.

The immunity gained by various forms and successions of inoculation, that immunity of which the protection afforded by vaccinia against variola is the type, is, of course, a specific one, a protection against some one disease and that only, and seems to depend upon the use of some product of the disease producing germ. So that the growth of the germ up to a certain point produces something that prevents its further growth, as the alcohol, which is the product of ordinary fermentation, when it has reached a percentage of sixteen, more or less, checks the further growth of the yeast plant and the process comes to a stand still.

This form of immunity, with the single grand exception just spoken of as the type, has not been certainly produced in man. Many attempts have been made to procure the same kind of immunity from other infectious diseases, notably, diphtheria, tuberculosis and hydrophobia. I include this last among the unsuccessful attempts with a certain amount of hesitation, as there are those who believe that it should rather be added to the other class.

The failure of the attempt of Koch in the same direction has been distinctly and definitely recognized only within the last two years. The disappointment was, indeed, great, but greater than it need to have been had the modest and careful student been allowed to follow his studies to their proper conclusion, and the methods of the newspaper correspondent and the advertising quack excluded from a region which should have been governed by the most rigid scientific precautions and unbiased judgment.

We cannot help recognizing that there are some defeats more honorable than some victories. The bold attack of the careful and skilful Koch upon the chief destroyer of our race, failure though it may have practically been, calls for our most sincere and fervent admiration. No one who had the opportunity to watch for himself the effects of tuberculin and compare them carefully with extended reports of others and with bacteriological investigation carried on in the same direction, could fail to be convinced that we had at least a substance and, so far as known, the only substance that bore a definite and specific relationship to the tubercle.

It is no wonder and no great harm, that the breeze of popular favor, fickle as ever, should have veered round as usual, but the infliction of anything like ridicule or reproach at the hands of scientific men, upon a piece of work so logical, so careful, so thorough. based upon a received and firmly-founded discovery of the same man, a discovery in itself enough to place him in the foremost rank of biological investigators, seems to me an act of ingratitude and cruelty.

It is by no means beyond the bounds of possibility that modifications of the method may yet do us good service, but let us hope that the work will be completed before it is carried from the laboratory to the public prints.

The other form of immunity is, in some respects, less complete but more general, *i. e.*, the resistance which a healthy organism offers to disease, to any disease. It is well enough known to all practitioners that some persons are much more prone to infection than others, with so far as we can tell, the same exposure and the same dose of poison.

We know that this is not always and entirely a matter of the health and strength of system generally, but it is, certainly, very often connected with it, and it seems to me that the extremists are sometimes in danger of forgetting this form of immunity in their desire to emphasize the danger of infection. I speak, of course, especially of tubercle. Within the last few years we have had the doctrine urged upon us that the spread of tuberculosis is due almost solely to the inoculation of the tubercle-bacillus. In one sense, it probably is so. That is, a person to whom no tubercular bacillus has access, will undoubtedly be free from the disease. But how many such persons are there living within the limits of the United States, or, in fact, in any reasonably thickly settled country in the world?

Yet we do not all have tuberculosis. The experienced practitioner, the observing clinician, and indeed the intelligent public have always clung stubbornly to the fact that tuberculosis is more likely to attack some kinds of constitution than others; the life insurance examiner cannot be persuaded by any theory of accidental bacillary infection that a descendant of a tuberculous family is as good a risk, no matter what the surroundings, as one from healthy stock.

It is impossible to account for the distribution of phthisis solely and exclusively by the opportunities for infection. There, certainly, must be a special susceptibility, congenital or acquired, a readiness of the soil for the seed.

There are many facts of resistance and vulnerability in the human subject which is not easy exactly to parallel in the lower animals, so that experimentation cannot give so conclusive results, but there are certain peculiarities as regards race and breed which are to some extent parallel.

There are some recent experiments which show how much and how rapidly the resistance of the system to infection can be increased and diminished by agencies which affect the general nutrition. The observers used as their test poison the charbon or anthrax (Milz-brand) bacillus, and their subjects were certain animals which are normally but little susceptible to this poison, pigeons, cocks and white rats. They found that if pigeons, which possess this relative immunity, receive the poison when in a condition of extreme hunger they lose their power of resistance and die.

If they have been starving six days before the dose and receive proper nourishment soon after they do not die. If the starvation period has been longer than six days they cannot, as a rule, be restored.

The authors conclude from the short period of time, which is necessary to produce these effects that the loss of immunity arises rather from the want of nutritive and resistant material in the blood than from any wasting of the solid tissues.

It is one of the commonplaces of medicine that diseases rage with special virulence among the ill nourished; years of famine are years of disease. The history of typhus, it has been said, is simply the history of human misery.

The dispensary physician recognizes the underlying diathesis of many of the affections he has to treat as poverty and hunger, and looks to the diet kitchen rather than to drugs for relief.

It has undoubtedly not escaped the attention of most of you how common it is to see a family of children go through with several infectious diseases in rapid succession, as, for instance, scarlatina, measles and whooping cough.

This illustrates well the difference between the two kinds of immunity. A child has scarlet fever The development of the poison produces such change in the system that it is no longer susceptible to this poison. The disease is self limited, just as the fermentation ceases in the sugar solution when sixteen per cent. of alcohol, more or less, has been formed.

In addition to this the system, for some reason, is no longer capable, for months, for years, for a lifetime, of reacting to that particular poison. The patient has acquired a *specific* immunity. But while acquiring this *specific* immunity the *general* power of resistance dependent on the perfect nutrition of all the tissues, perhaps, especially the blood, has been decreased by the universally depressing effect of the scarlatine poison and the fever, so that to every other poison, beside the scarlatine the patient is more susceptible than before, and may then, in the presence of another poison, go though with the appropriate symptoms and acquire another specific immunity, say this time, as to measles. It is obvious how important such considerations must be in the matter of prophylaxis and therapeutics.

To go back to our original theme of tuberculosis, we cannot help recognizing, in the light of the more recent researches, the danger of infection to a considerable number of persons by the tubercle bacillus, whether in the milk or flesh of tuberculous animals, or that which is, probably, far more common, the dried sputum floating in the air and blown about everywhere as dust. This we can only to some extent avoid. Crowded rooms and conveyances and city streets are, of course, dangerous; but, how many can avoid them? Association with the tuberculous probably carries with it a certain risk (though, in my opinion, not a very great one), but affection and duty may be more powerful motives, even, than the dread of consumption.

Specific immunity from tuberculosis we cannot yet produce.

We find ourselves, therefore, with no lightening of the duty always imposed upon us in regard to tubercles, but with another added which bears not only on the physician and his patient's welfare but on the duty of that patient toward the community and that of the public health officers in the same direction.

The necessity of guarding against the tuberculosis of cattle is an important one. The phthisical patient should be made to comprehend the danger of spreading abroad the cultures of his bronchial tubes and cavities. But beside this, the demands of the old plan of getting the general nutrition into the best possible condition, either before or after the lodgment of the bacillus, is just as urgent as ever. The danger which cannot possibly be entirely avoided must be met by strengthening the defences. Fortunately, many of the same means, the most important, the most effectual, answer both indications. The air of lofty, dry plains is, firstly, relatively free from the infecting bacillus; secondly, a general tonic; and, thirdly, stimulates to increased vigor of respiration which renders the culture media of the bronchial tubes less appropriate for the growth of germs, should any find lodgment there. Until a prophylaxis dependent on a specific immunity can be obtained, it must be built up upon a general one; and, so far as possible, avoidance of the specific infection.

We used to be told that we should beware of treating the disease, that we should treat the patient who had the disease, and that disease was not an entity but a mere group of symptoms.

Now, looked at simply as a caution against a too vigorous and thoughtless therapeutics, this maxim does very well; but, as a fundamental rule of practice, it is one we are always striving to get away from.

Whenever we can get at the materies morbi we get rid of it, if possible, and it would, certainly, be highly unreasonable to do otherwise, provided, always, that the attempt do not endanger the patient more than the disease does. Thus, whenever we can we wash out the poisons of lead, mercury, arsenic and syphilis. We destroy or decompose or dissolve the rheumatic and gouty poisons with alkalies and salicylates.

We should do so with more poisons if we could get at them. Now, when the bacteriologist gets his seed from a certain disease, cultivates it, separates it from anything else, and then reproduces the disease by re-inoculating it, it seems to me that we have a very real and non-imaginary materies morbi indeed: and the attempt to kill or neutralize it is an eminently reasonable and proper one.

Unfortunately, human protoplasm is amenable to most of the same influences which act unfavorably upon organisms so far removed to the other end of the scale of being as the bacteria. In other words, most of our antiseptics and disinfectants are dangerous to the patient as well as to the disease germ; and, I fear, it will not be until the ideal disinfectant or group of disinfectants is found, that we shall be in a position to fight the germ without danger to the host.

It seems to me very problematical whether we are ever able to successfully attack the specific poison of most diseases after it has once fairly entered the circulation—that is, with drugs of the old fashioned kind. Some exceptions there are, already, to this rule. Our old friend, quinine, still holds its own and the plasmodic of malaria undoubtedly diminish and disappear under its influence.

And, again, it is undoubtedly, to a considerable extent, within our power and, probably, will be more so, to disinfect the intestines and other mucous surfaces which act as portals of disease, as the surgeon now does the cutaneous surface through which to make his incisions.

But, for most of the infections we shall have to wait for the special and peculiar results obtained from the bacillus, itself, which we desire to combat.

One paragraph in the rules of the Association demand that the Chairman of each Section should make suggestions in regard to the improvement in the methods of work.

Sidney Smith made a remark showing much knowledge of human nature, to the following effect:

"Benevolence is one of the most universal sentiments of mankind.

"A never sees B in distress without wishing C to relieve him." I might paraphrase by saying, "Scientific enthusiasm is one of the most common attributes of the physician.

"The medical orator never sees a good line of research without wishing the worker to follow it up."

There are many subjects upon which I should be glad to see laboratory work done; but, I am certainly not presumptuous enough to make any suggestions to the workers as to the direction or improvements of their researches. The founding of laboratories with all the appliances for following up the new lines of research mark an era in medicine.

We have reason to congratulate ourselves that educational interest and private liberality are doing for us in the United States a work which remains, to a considerable extent, at least, still in the hands of paternal governments in the old world, and that there is constantly growing up among us a class of men eager to enrich our science and capable of fully profiting by the advantages in their hands. So that clinical medicine and experimental research may go hand in hand, each making the other more careful and more accurate.

The experimenters are constantly furnishing to us data, sometimes of a more exact and scientific character than we clinicians are ourselves able to attain, data which may be of the utmost value in giving us new clues to the complicated tangle which we have to unravel in our study of human disease.

Our material and our methods, no matter how careful we may be, do not permit us the same kind of results or the same kind of precision which may be attained in the laboratory. On the one side the physician who wishes to work for the elevation of his calling, is required, as a scientific observer, to be accurate, to weigh and to count instead of to estimate and suppose, to correctly determine the amount and the location of the lesion, the height of the fever, the amount of the excreta, the species of the bacillus, the dose of the poison; then, also, as a sagacious practitioner, he must guage the factors which cannot be expressed in a numerical form, the weakness of tissues, the nervous instability, the diathesis hereditary or acquired and, finally, as guide, philosopher and friend, he has to allow for human frailties, the prejudices of family, race, religion, for vice and for ignorance, for interest, for caprice. Verily, the problems of the sick-room are not those of the laboratory.

It seems to me that the function of the physician, as an agent in the advance of biological science or a contributor to the physical welfare of society in the race, ought to approach as closely as the situation will allow to that of the laboratory specialist, and this is all I can offer as my suggestion as to improvements in the methods of work.

That clinical work should be freed, as far as possible, from the personal errors (amiable weaknesses, perhaps, but pernicious to the truth) into which almost every one of us is more or less easily led by ambition, the desire to excel, to originate, to feel that one has done a good or a great work.

That one should report what actually happens, not what he supposes the cause of success or failure to have been, not speculation but observation, and that he should be just as candid with failure as with success.

In other words, that the attitude of the physician toward medical *science*, not toward the patient or toward the medical *art*, should be as impersonal as he can make it.

Discussion.

Dr. David N. Kinsman, of Columbus, Ohio, in opening the discussion said: This subject of immunity is today one of pressing interest to the profession. I believe that any man who has anything to bring to the profession on this subject ought to do so, and, as I have been engaged in some experimental studies with a bearing in this direction, I desire to narrate the results.

The subject of protection is one thing, absolute immunity is quite another. We can by certain processes render a man partially immune; or we can by other processes render him more immune; but I doubt if we can render him entirely immune. As yet we have only the results of experiments from which to draw conclusions. No matter upon what animal we make the experiments, they have a bearing upon the whole subject.

The speaker then narrated how for some time he had been interested in making experiments in the production of immunity from hog-cholera by means of successive inoculations in the hog.

Dr. Didama, of New York, asked the last speaker whether any results could be obtained from the inoculation of fluid filtered from the cultures, or whether the inoculations have to be made with the bacilli.

Dr. Kinsman replied that they had not made an investigation of the effects of ptomaines and the other products of the bacilli, but that the inoculations had been made with the bacilli.

Dr. Dennison, of Colorado, arose to speak in regard to a statement which, he said, had emanated from Cincinnati. A physician in that city had stated that Professor Koch acknowledged to him that his tuberculin was a failure. After reading the statement the speaker wrote to Professor Koch to inquire as to its truth or falsity. Koch's reply states in the first place, that he has no knowledge or acquaintance with the physician who made the statement, and second, that the statement was utterly false. Tuberculin is not a failure; the failure is on the part of the medical profession. They have not come up to appreciate it. When they do, its success will be assured.

The speaker then referred to the culture experiments which have recently been made with the thymus gland as a culture-medium, by which the strength of the germs had been reduced so much as five or six thousand times. In this manner the poison of diphtheria has been experimented with. It is probable that the material which we use for the attenuation of virus will prove to be an important factor in the result which we attain.

Dr. Greenlee, of Kentucky, stated that he had had some experience with hog cholera, and that from his observations of its spread from a given locality to another, he had concluded that actual contact of the healthy animals with those having the disease was not necessary. He had often seen it spring up among hogs at a considerable distance from any known source of infection.

Dr. S. P. Kramer, of Ohio, remarked that he was happy to state that the individual who made the statement reported by a former speaker in regard to Koch's alleged acknowledgement that tuberculin was a failure was not a resident of Cincinnati but a visitor.

Dr. Kramer stated further, that in the production of immunity, two methods have been principally pursued. The one is that of the employment of attenuated cultures, as developed by Chauveau and Pasteur. The second is the method by which an albumin derived from the body of the germ is utilized. This, when brought in contact with certain principles contained within the animal organism, produces a body that neutralizes the toxic principle and reduces the pathogenic germ to the level of an ordinary saprophytic germ. In the first form, the antitoxin is formed by the growth of the germ within the body; in the second by the growth of the germ in the test tube. The first method, which may be called serum-therapy, has been credited with the cure of six cases of tetanus.

The next in order was a paper on

THE ETIOLOGY OF SPECIFIC DISEASE.

BY R. FRENCH STONE, M.D.,
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Mr. Chairman and Gentlemen:—If, in the present paper, I take issue with any of the audience in regard to recent or novel theories relating to the proximate causes of our most important diseases, be assured that it has been done with all sincerity, and with the kindest feelings for those with whom I may differ. The writer does not wish to be considered as actuated by a spirit of obstinacy, or unreasonable skepticism. Indeed, it is so much easier to accept the dictum of others, or to shift the responsibility of our views onto those who set themselves up as authority, than to formulate the lessons of our own observation and experience, so much more convenient to accept the thought of others, than to think for ourselves that natural indolence protests against the sacrifice. In medicine, as in all other pursuits of life, we are more inclined to simply acquiesce than to contradict, and usually there is so little encouragement to do otherwise that we rarely wish to intrude our own opinion, but infinitely prefer that others may take the lead and we will follow, however fallacious and misleading such guidance may prove. Hence, it may be said to-day, as in the past, the greatest bane to medical progress is slavery to so-called authorities, and that one of the greatest hindrances to the acquisition of real knowledge is a blind reverence for great names.

Asking your pardon for these introductory and somewhat irrelevent remarks we will now call your attention to the subject of our paper, namely, The Etiology of Specific Disease. By specific diseases is meant certain maladies possessing distinct characteristics, and which are not only engendered by special causes, but are supposed to be incapable of development without the application of a so-called specific cause for each disease respectively. Such, at least, is a strict definition of the phrase "specific" as warranted by the phenomena of infectious and inoculable maladies. According to our text-books there are 1,146 diseases which affect mankind, and require the study and attention of the physician, but from this extensive nosological list, less than twenty-five diseases are to be reckoned as belonging to the class under consideration. Yet these are known to cause nearly two-thirds of our total mortality. Medical history informs us that many of the pestilential maladies which scourged the world in past ages belong to this class and far exceeded the mortality of any which now prevail. Indeed, so great was the special increment of their spreading power and malignity that as *Niebuhr* has shown they not only decimated fleets and armies, but influenced the fate of cities and empires.

On the great plains of plague-stricken Asia, centuries before the Christian era, the query: "Shall such ills come by chance?" was then answered—

> "Like the sly snake they come
> That stings unseen; like the striped murderer
> Who waits to spring from the Karunda bush,
> Hiding beside the jungle path; or like
> The lightning striking these and sparing those,
> As chance may send."
>
> —*Light of Asia.*

Shall the intelligent physician of to-day meet this problem with no more rational interpretation than the ancient Buddhists in the earliest dawn of the world's history? Has the acquisition of long experience or the accumulated knowledge of the past thrown no light upon the cause and prevention of the maladies under consideration? In answer to this it may be said that the proximate cause of "specific" disease is now as it has ever been one of the most puzzling questions with which the human mind has had to grapple. It can not yet be said that we have positive knowledge as to the specific poison, if we may so call it, which produces scarlatina, diphtheria, yellow fever or cholera. The chemist can not detect in the atmosphere the cause of those infectious diseases which spread only through this medium, or *chiefly in this way, and to assert* that he can with certainty detect any peculiar substance in the blood of the most pestilential malady, that is its *positive etiological* factor would be a statement in advance of the facts of exact science. Neither by the microscope, nor by the minutest chemical analysis can we distinguish the pus globule of small-pox or of syphilis from the most laudable pus of the surgeon. Nor have the most delicate tests as yet shown any thing especially distinctive in the saliva of a rabid animal by which a specific disease of this class is communicated so certainly and positively by direct contact. The *agens morbi* of these diseases in our present state of knowledge is still an unsettled problem. But since it has been truly said that the "curse causeless shall not come" some explanation of the etiology of our specific diseases, like Banquo's ghost will not down, hence modern physiological, pathological, microscopic and chemical research has led to the presentation of several novel and plausible theories to account for the proximate and specific factors which give rise to the development of the diseases known to be of infectious or contagious character. Before their consideration, however, it may be said that it seems impossible to explain the development of any specific disease either *exopathic* or *endopathic* unless there be a recognition of certain predisposing causes of such maladies. We refer to pre-natal, conditional, and functional influences. There can be no reasonable doubt that some of the so-called specific diseases owe *their origin mainly to a hereditary transmission of a* proclivity to such disorder. This is notably true of tuberculosis, or it may be supposed that the inheritance lies in the tissues or tissue elements predisposing to certain diseases in certain families. In the spreading of epidemics, contagious and personal, susceptibility may be factors in a partly *conditional* sense. Influences which the old authors called "atmospheric," the various direct and indirect influences which relate to the normal succession, and occasional abnormality of seasons in respect to the isolation of our planet and of the temperature and humidity of air and earth are perhaps generally too vaguely regarded as elements of interest in the present question, but are possibly factors which no one who tries to solve these problems should omit from scientific consideration. Again, failure in the function of the lungs, the liver, the intestinal glandula, the kidneys and the skin to eliminate the *waste products* of the system must be regarded by the physiologist as one of the most potent predisposing factors in the production of every form of zymotic disease. Science is more and more teaching us that the "survival of the fittest" is applicable to specific disease, and that the victory will be on the side of the attacked in direct proportion to the normal condition of all the bodily functions, and that the factors mentioned not only favor the development and intensity of such diseases, but that without such influence their establishment would often be impossible.

The theories of the proximate and specific cause of specific diseases may now be noted in the order of their popularity, but inversely as we believe with respect to their true etiological import. We refer to the *bacterian* theory, the *bioplast* theory, the *chemico-physical* theory, the *nervo-glandular* theory, and the theory of *perverted vital force.* The first hypothesis attributes specific diseases to the agency of microbes or minute living objects. By most authorities these are all classed in the vegetable kingdom, and might be termed microphytes of the fungous order. By some they are dominated parasites. They are supposed to operate by producing changes in the structures affected— the blood, the cutaneous and mucous membranes, the cellular tissue, and glandular organs of a destructive character, deranging their functions, disturbing the processes of nutrition, of circulation, of calorification and secretion. Fever, loss of appetite, emaciation, prostration of the muscular and nervous forces being the usual results. Their mode of action suggested by the belief that they are living objects, is that by enormous multiplication they may act mechanically through their bulk, obstructing the capillary circulation, and by pressure on solid tissues cause their gradual destruction by robbing the blood of the pabulum used for growth of the mycrophytes, thus effecting emaciation by spoliation, and developing fever by conversion of molecular motion into heat, and deranging secretion by mechanical intrusion in the glandular structure; also engendering neurosal affections by similar action on nerve structure.

The discovery of the dependence of alcoholic fermentation upon the presence of the yeast plant (*saccharomices cervisa*), and the general resemblance between the symptoms of contagious maladies and the processes observed in the fermentation led to the use of the terms *zymosis* to express the action, and of *zymotic* to express the character of all those diseases to which microbes in general are supposed to give rise. But all such views for the present must be largely speculative. There are many points of difficulty requiring to be more fully illuminated by careful observation before the bacterian theory becomes an established doctrine in etiology. Many of these difficulties have been well formulated by Professor Hartshorn, of Philadelphia, and may be expressed in part, as follows:

1. Throughout all the investigations which have been made, or likely to be conducted, there remains the extreme difficulty, if not impossibility, of total separation between the microbes themselves and the matter of the vehicle in which they exist, such as blood virus, vitiated secretions, artificial culture material, or whatever it may be. All the effects ascribed to the bacteria, except their proliferation and mechanical intrusion, may, with equal propriety, be attributed *to the toxic* action of a portion, however minute, if the soil in which they have lived, whose modifications must be coincident with those which they undergo.

2. The absence of the characters belonging to definite organisms in the easily studied virus of small-pox and vaccinia is presumptive evidence against the probability of such organisms being essential to the causation of other enthetic diseases.

3. Bacteria are rarely seen in the incipient stages of disease, but after the blood has become impoverished, the secretions depraved or morbid products are undergoing decomposition they are found most abundantly, and are found most numerous in materials of a septic or infectious character after their period of toxic intensity has passed by.

4. Bacteria have been, however, sometimes abundantly discovered in healthy bodies upon the various mucous membranes, in the blood and it is said *in* countless number in fecal discharges without any specific disease following.

5. Suppuration may be produced without the presence of minute organisms of any kind. Bacteria have been found under Lister's antiseptic dressings without suppuration following. Pathological investigators (Paul Bert and Rosenberger) have destroyed all the microbes in a septic fluid and yet found it to retain its poisonous quality. Various elaborate investigations have proved that fatal septic poisoning can be produced in animals by the products of decomposition without the presence of living organisms, and experiments have shown that normal blood, when deprived of oxygen, in the absence of microörganisms, may acquire *septic* properties, and also that septicæmia may be induced by the injection of free fibrin ferment and other substances into the blood in the absence of such minute organisms. The same condition has also been produced by the subcutaneous injection of filtered saliva containing no microbes.

6. While Klebs and Koch *maintain the definite specificity* of each minute microphytic organism, on the contrary, Billroth, Burden, Sanderson and others assert their mutual convertibility according to the influences of environment, and Pasteur, Wood and Formad report experiments making it appear that modification by culture is possible, converting an innocent into a malignant parasitic organism, or a death-producing microbe into one capable only of causing a transitory and not dangerous local affection which, nevertheless, secures to the animal thus treated immunity when subsequently exposed to the deadly infection. But in none of these cases is there reported any morphological change, whatever, in the bacilli or micrococci experimented with; their capacity of reproduction through several generations being retained.

7. Other points of objection to the bacterian causation of disease relate to their specificity. While it may be conceded that like produces like is a rule of nature, and that different forms of bacteria may reproduce themselves, it does not necessarily follow that they can reproduce the disease which they may accompany. That *disease may be propagated like* plants and animals, by means of a peculiar form of these organisms would require the recognition of disease as an entity and not a physiological perturbation, but the analogy is so absurd and the assumption so unwarranted as to need no argument for its refutation. While this theory requires the belief that each specific disease is produced by a certain variety of these organisms and no other, it fails to explain *how* and *why* they are causative of a special disease or of immunity against subsequent attacks. If they act as a specific cause of a specific disease by their enormous multiplication in a mechanical way, through their bulk obstructing capillary circulation, or by pressure on solid tissues causing gradual destruction (as in tuberculosis), this is a property that is not confined to any particular form of such organisms, but is common to all of them. Then why should one particular variety engender one disease and not another, and why should they not continue to produce identical results as often as they gain entrance into the system?

It is held by Professor Jaccoud and others that the bacteria of infection are indistinguishable from *harmless* ones except by their effects, and that as the liquids inhabited by them are frequently infectious, they are therefore merely a medium through which contagion acts. In some instances becoming so infected themselves as to transmit the property through several successive generations. Again, some observers attribute the symptoms of many acute infectious disorders to rapid development of poisons similar to vegetable alkaloids by bacteria in re-moleculizing the normal fluids. Others hold that such animal alkaloids are constantly produced in the living body by albuminoid decomposition without such agency, and that the general function of minute cryptogamic organisms, when present, is of a beneficial or conservative nature in re-appropriating the product of organic decay.

Analogy in nature renders this scavenger theory more probable *per se* than that which holds them to be destructive parasites or poison-producers in the bodies which they may inhabit.

We may next briefly consider the vital germ theory, of which Lionel Beale is the chief exponent. Dr. Beale, *than whom no greater micrologist* has ever lived, uses the term *bioplasm* to designate the physical basis of life and growth. This consists, according to his views, *of separate particles* of less than $\frac{1}{1000}$ of an inch diameter, originating in the blood, and designed for the nourishment and growth of all the tissues of the body. *They are described as soft*, without color or structure, and enclosed in a colorless capsule, through which liquid pabulum passes for their growth. New bioplasts *are formed* by divisions of mature ones, and the new ones continue to grow by imbibition until they divide or contribute to the formation of solid tissues. *Microphytes*, with an average diameter of $\frac{1}{8000}$ of an inch, are considered by him as the lowest form of bioplasm, existing in all the fluid and solid tissues of both plants and animals, as well as in all kinds of mineral substances, and under all meteorological conditions (though dormant under some conditions of temperature and dessication). Being omnipresent, and, as he believes, indistinguishable from each other by any precise physical characteristics, he denies their relation to disease of any kind. Contagious diseases are attributed by him to degraded or perverted bioplasm descended from original healthy bioplasts. These constitute what he terms "disease germs," which have property of self-multiplication like healthy bioplasts, both within the diseased body and in any healthy susceptible body to which they may gain admission. These contagious bioplasts are extremely minute, having a diameter less than $\frac{1}{100000}$ of an inch, and though possessing "specific" characteristics for every disease, one cannot be distinguished from another, either by the microscope or by chemical analysis; neither can the healthy bioplast be distinguished from the diseased by any test except its effects. The disease germs referred to in this connection become noxious only after entering the blood and then passing into the solid tissues and secretions. According to this investigator, their multiplication in the body always elevates the temperature, and this may continue after the death of the victim, and that fever is due to this process, and not to oxidation of tissues; death being the result of change in the composition of the blood and derangement of capillary circulation. Beale's theory of migrating or transplanted bioplasts, in the writer's opinion, contains an element of truth, but has thus far received very little support besides that of its distinguished author.

On the supposition that *disease germs are only* abnormalities or deviations from healthy bioplasts which may be detached from one body and planted, while yet retaining vitality, upon another, and which may there undergo changes more or less morbid and destructive to the individual by whom they have been received, we certainly have a more plausible explanation of the transmission of contagious disease than that which is claimed by bacteriologists.

We will now call attention to the *chemico-physical* theory of Liebig, which embraces the doctrine that the *materia morborum* may consist merely of inorganic elements or compounds which, by entering the body and acting as chemical poisons, engender specific disease, and which affirms that the action of a *virus* is not essential to the development of a zymosis, or fermentation in the human economy. This hypothesis has been more clearly expressed in the phraseology of the late Dr. Snow, of London, as the theory of *continuous molecular change*. Chemists have defined this change to be decomposition by contact, or the action of presence. An illustration of this law is the power which small quantities of certain substances possess of causing unlimited quantities to pass into the same state. The phenomena of crystallization, the molecular motion that takes place in the operation of skin grafting, the diffusion of heat *from molecule to molecule, or the extension of a flame* from a burning body to combustible material within its reach, may be cited as physical instances, and *analogies of the operation of this law. Hence, if a* decomposing organic molecule is introduced into the human body, by this law of catalysis or induction it imparts its motion to other molecules with which it may come in contact.

The processes in fermentation, putrefaction, septicæmia and the multiplication of small-pox or syphilitic contagion from the smallest inoculation in the human body, are accounted for in a similar manner. Against the necessity of the action of minute living organisms to produce these morbid processes, the advocates of this theory urge that the above named changes, and many others like them, are produced in the absence of such organism by chemical agents formed in the body, such as *leucomaines* and *ptomaines*, those physiological and putrefactive alkaloids recently investigated by Vaughan and others, and that inorganic substances may develop such changes, *similar to the* action of sulphuric acid when it changes starch into sugar. In support of this doctrine it may be asserted, that the bacterian theory that every particle of contagious matter is (at one time at least) a living organism, and that only such living organisms reproduce their kind and the diseases which they accompany, is one which loses weight as an argument in view of the natural history of small-pox and analogous diseases.

The Nervo-Glandular Theory of the origin of specific disease has been plausibly urged by Dr. W. B. Richardson, of England, and is apparently an outgrowth of his studies of the above doctrine of Liebig concerning fermentation and its relation to nitrogenous material. He was convinced by experiments that zymotic disease could be communicated from one animal to another *by inoculation of various secretions*. He also succeeded in producing from such fluids alkaloidal substances of crystalline structure. *Inoculation of these in solution was followed by* the same specific disease as had yielded the alkaloids. (Leucomaines? or ptomaines?) Hence he concluded *that any animal* secretion might be made to yield a contagious principle to which he gave the name "septine," and the maladies thus engendered were designated by him as "septinous." The true *contagia*, in his belief, are therefore all of glandular origin, and the venom of serpents was suggested as a type of their source and action, the effect depending not on a multiplication of germs, but a catalytic influence, the agent changing other substances without undergoing change itself, and that the poison, therefore, is reproduced only in the infected and diseased body through its own secreting organs. He believes, also, that ordinary secretions may change character, and become poisonous without previous infection. For example, the exudation of ordinary peritonitis may give rise to puerperal fever, and typhus fever may be produced in overcrowded apartments by absorption of animal exhalation, and in this way contagia of various kinds may constantly arise *de novo*. In furtherance of his theory, Dr. Richardson emphasizes the fact that the number of separate communicable maladies has a close relation to the number and character of the secretions. As examples, hydrophobia is derived from the saliva of rabid animals; glanders from nasal mucus; enteric fever is traced to the intestinal mucous glands; diphtheria to the mucous glands of the throat, and scarlet fever to the secretion of the lymphatic glands, but admits that in some instances the blood corpuscles become the seat of the catalytic change. As Richardson maintains that communicable disease may arise without intervention of contagious matter, he supposes that the virus may arise through previous impressions upon glandular organs, and refers the origin of such cases to fear or anger, or other emotional disturbance, when no mode of communication can be discovered. In favor of this hypothesis much might be said.

It is now known that some of the most remarkable pathological effects may be artificially induced, either by drugs, the precisely localized and measured action of heat and cold, or by other agencies acting upon the nerve centres in the brain and spinal cord. And since it is admitted that the brain is not only the instrument of the mind, but that it presides over and controls the functions of all the other organs, its own disorders therefrom can hardly fail to affect them. Strong mental emotion may not only suspend or pervert particular functions, but is even capable of destroying life by arresting the action of the heart. Sudden mental worry may excite dangerous interference with digestion or start an abnormal cardiac rhythm. Mental shock can check or increase the action of the kidneys, and in fact affect all the secreting or excreting organs of the body. The influence of continued mental anxiety and the pernicious effects of habitual grief upon the nutritive functions, are plainly marked. Under its corroding blight the skin loses its freshness and grows dry and yellowish; owing to derangement of the liver the bowels become confined, and their habitual constipation is apt to be followed by absorption of fermentative and putrefactive gases and other noxious materials, giving rise to fecal toxæmia with all its consequences, and thus not only by reflex influence of local irritation, but direct influence through the blood, the vicious circle is completed by the further induction of disease of the brain and nervous system. Anger often brings on a convulsive attack, and insanity frequently follows close upon exaggerated mental effort, and especially upon violent mental emotion, whether of terror, grief or joy. The principle of moral contagion cannot be denied. The mind is affected by imitative influences. Thus chorea is excited in some individuals by watching choreic movements in others, and a single hysterical patient may arouse in others symptoms almost identical with her own, while the direct influence of the mental state upon existing disease, and in governing the susceptibility to others or favoring their development, is of the most potent character. For evidence of this influence in the genesis of specific disease the reader is referred to that most interesting book of Dr. Tuke's, entitled "Influence of Mind Upon the Body." Apropos to this subject are also the recent remarks of Sir Joseph Fayer, at the Sanitary Congress at Brighton, England, with regard to the expected invasion of the country by cholera. After denouncing quarantine and cordons as antiquated, worn out and obsolete devices, he urged that the true way to protect ourselves from this disease is to see that our homes are clean, that the water we drink is pure and the food we eat wholesome, and above all else *to keep our minds free from panic*. A panic state implies a disorganized vitality, and of its influence in aiding the class of diseases to which cholera belongs there can be no doubt.

GENERAL CONCLUSIONS.

Theory of Perverted Vital Force.—We must be somewhat brief in presenting the following conclusions as to the etiology of specific disease, as our views have been already emphasized as occasion occurred during our argument. It now remains for us to deduce several general facts which may serve to harmonize all of the theories presented, conceding to each its due importance, and out of all endeavor to construct one of our own which may serve to show how and why communicable diseases are made *specific*. The advocates of the bacterian, the bioplastic, the chemical, and of every other theory of zymotic disease, unanimously concede the fact that the presence of nitrogenous matter in a decomposing or readily decomposable state affords the best possible *pabulum*, either for the development of microphytes, the infection of bioplastic elements, the elaboration of animal alkaloids or the action of ferments. Hence a *common condition* which all these agencies require for their action in the production of specific disease is the presence of an excess of such pabulum in the blood of the individual attacked. Again, a careful study of the foregoing investigation as to the cause of the diseases under consideration certainly teaches that we must be on our guard against ascribing a specific etiological influence to the various forms of vegetable microörganism. For in certain cases these may have been in the first place non-existent, as when such a disease has been "autogenetic," and in no sense a derivative of antecedent disease of the same kind. This caution is especially applicable in regard to such an affection as erysipelas, which, although contagious, is also, on very good grounds, judged to be generable, especially during certain states of lowered health, induced by renal disease and some other visceral affections. Though not so positively known, it is by many deemed probable that a similar caution may be necessary in regard to more general contagious affections, such as diphtheria, typhoid and typhus fevers and cholera, which, though certainly infectious, may also be autogenetic. Among these diseases we might still mention several others which, although their ordinary or normal mode of spreading is by contagion, yet beyond reasonable doubt do sometimes arise spontaneously. We refer to such maladies as scarlatina and yellow fever, gonorrhœa, rabies and glanders; the two last, in fact, being only of spontaneous origin in the lower animals, from which they are communicated to man.

It would appear from the conclusions of Bastain and others, that in those complex, prolonged and continuous morbid processes constituting the phenomena typical of some particular infectious malady, that at some stage of this complicated chain of processes, and somewhere (that is in some organ or tissue, or in the blood) certain organisms may arise *de novo* and are not to be regarded as direct descendants of preëxistent organisms any more than we would regard the pus corpuscles met with in a case of purulent ophthalmia or gonorrhœa as direct lineal descendants of those which may have taken part in occasioning one or the other of such diseases. But admitting that the doctrine of *heterogenesis* is established and that of *archebiosis* or spontaneous generation is disproved by the experiment of Tyndall, it is by no means clear that the assumed mode of operation of microphytes in the causation of disease is the true one, or that their influence in the transmission of disease is not simply that of carriers of contagion the same as the non-vitalized chemical compounds of Liebig, the leucomaines and ptomaines of Vaughan, or the cast-off and altered glandular secretions and tissue elements of Richardson or Beale. It is not yet possible to say with regard to metabolic contagion what is the *essential constitution* of contagious matter, or what is the intimate nature of the transforming power which the particle of such matter exercises on the particles which it infects. Nor are we able, by actual demonstration, to say that contagion is a *material substance*. We know that the ancient philosophers in investigating the nature of heat regarded it at first as a kind of subtile matter which insinuated itself into the substances of bodies and resided there with greater or less manifestation of its presence, but heat is now regarded and proved by scientific observers to be, not a material substance, but simply a *condition of matter*—a phase of force, or molecular motion—and from the nature of its action *contagion* like the *force caloric* is, in the writer's opinion, a mere condition of matter and not a *material substance*.

As regards the question of the form of force which may explain the transforming power of the contagion of specific disease, science is still ignorant. Yet expert chemists express clearly enough the conviction that there exists a certain great unit of force in nature which lies beyond their power of analysis, measurement, or even of definite nomenclature. But in that most interesting, yet most difficult and hitherto almost uninvestigated branch of chemical dynamics, we are supposed to have our nearest clew to the scientific problems connected with the specific etiology of disease. Any theory which tends to explain the *rationale* of the processes under consideration must recognize the existence but perverted operation of the so-called vital forces. The theory which we present assumes the identity of the physical and vital forces. The physical forces embrace magnetism, chemical affinity, heat, electricity and motion. The vital forces are assimilation, combustion, animal heat, nerve force, and muscular contractility. All scientists now concede the correlation of the physical forces, that they are all convertible the one into the other, and the force, like matter, in any form can neither be created nor destroyed, and as presented to us in the universe, they are both indestructible and inseparable, perpetually existing, and unchanging in quality, yet ever changing in form. The intimate nature of force, however, is the greatest mystery of all unrevealed phenomena, visible only in its effects as manifested to our senses, it becomes at once an unknown and unknowable power, transcending all human knowledge and conception. We can only judge of its presence, therefore, by the peculiarity of its action, and the effects which it produces. If we accept the teaching of modern science, all matter is the vehicle of change, motion the result of change, and *force* the cause of change. Life, as we understand it, depends upon the presence of a material substance operated upon by force, resulting in movement, and the harmonious interactions of these conditions when applied to the animal body not only constitute life, but health, while its derangement as surely eventuates in disease and death. According to the demonstrations and conclusions of modern investigators of physical science, the *vis viva*, or life force, is simply the combined influences of the physical forces which are constantly changing in form during the various vital processes, the supply and action of the same being maintained by the food we eat, the fluids we drink, and the air we breathe. Let us suppose, for illustration, that the nutrient fluid charged with oxygen is placed in an *electro-positive* condition, at the same time the tissues are in an *electro-negative*, or magnetic condition, by which assimilation or chemical affinity is induced; this involves oxidation, combustion and molecular motion. Molecular motion is converted into (animal) heat, and heat is converted into (animal) electricity, or nerve force, and nerve force induces muscular contraction or mechanical motion, which in turn serves to assist and perpetuate the operation of the other manifestations of force, in that it maintains the respiratory function, contracts the heart and arteries, propels the blood to all parts of the system, and thus supply tissue waste and equalize temperature, as well as control the various secretory and excretory functions of the body.

Such are the different manifestations of the so-called "vital forces," the harmonious and normal operation of which constitute life and health, but when perverted will not only occasion disease and disorganization, but death either local or general, as conditions may determine. For example, if the blood from any cause becomes contaminated or deficient in oxygen, the forces governing nutrition, such as assimilation and combustion, will be perverted in their operation, waste materials, or materia-morbi will be developed, which may eventuate in morbific effects, either as irritation of nerve centers governing heat production, or local irritation exciting inflammation of various tissues or organs, as well as malnutrition and disorganization of various degrees and variety according to the extent of toxæmia, and the functional activity of those organs provided for elimination. For the materia-morbi thus accumulated may remain in a latent condition until equiliberation is commenced by increased oxygenation, and this may augment the amount of animal heat within the body, causing fever, which may in its turn induce pathological lesions, varying in character with its intensity, ten degrees of which mark the difference between life and death. Although force can only manifest itself by molecular motion, yet it may exist in two general forms known as potential energy and actual energy. Force stored up in certain conditions of matter, as in the tension of the particles of an explosive compound, such as nitro-glycerine, or in combustible materials as wood, coal and the food of animals, is known as potential energy, that is, power capable of being liberated for the production of effects. But when the nitro-glycerine explodes, the fuel is burned, or the food is oxidized in the animal body, the force they contain is given out in the form of effects produced, and the potential energy becomes actual energy, or in animal bodies, living force. Such is the nature of unoxygenized material in the blood constituting an *agens morbi*, in that it represents potential energy, becoming actual energy, and capable of producing morbid effects when subjected to zymotic action.

Force acting upon different forms of material substance will manifest itself in different ways, as chemical affinity, combustion, electricity, etc. Also force in its different forms acting upon the same material substance may give to a multiplicity of effects, as quantity and local conditions may determine. But force of any particular form, whether physical or vital, operating in a certain direction, producing certain results, *tends to continue its action in that direction, and the production of the same results as long as conditions favorable to its action obtain.* Thus the molecular motion imparted to a conducting wire from a galvanic battery may continue for thousands of miles. A spark of fire may destroy a city, and so the smallest quantity of chemical or perverted vital force arising from the blood in a state of zymosis, and conveyed by means of its own elements, may set up the same morbid action in other individuals whenever their blood is of a suitable zymotic condition, and it is operation of this law that gives us the *rationale of contagion.* But we find in the physical forces, so in the vital forces;—as in the great laboratory of nature, so in the individual organisms, that action is met by counteraction, and the force, however manifest, sooner or later tends to equiliberation. For this reason galvanic batteries become exhausted, fires must be fed with fuel, and zymosis ceases, and disease ends in the affected individual, and in communities when the material suitable for its action has been extinguished. Strictly speaking, therefore, *contagion is a phase of perverted vital force*, and this morbid influence does not imply the agency of microörganism any more than that of any other medium, vital or otherwise, which may serve to convey its action. The essence of contagion is not a material substance, nor does it necessarily require a definite agency through which it must operate, but is simply a form of force as imponderable in its nature as heat, light or electricity. Specific only so far as it naturally tends to operate in the same direction upon the blood of another individual when it contains certain constituents of identical character with those upon which it has been operating in the blood of the infecting individual, which is likely to be the case when individuals and communities are alike subjected to the same general and special predisposing causes of disease.

In conclusion it may be affirmed and reiterated that the agency through which contagion acts is not limited to any particular form of mycrophyte, or to the bioplasts of Beale, or to the waste products incident to tissue metamorphosis, for all may serve as carriers of a perverted vital force. While the types and varieties of infectious disease may be determined by the impressions made upon the nervous system, but influenced by the condition of the individual with reference to his powers of constitution, age, susceptibility, weakened condition of certain organs or tissues from previous disease or tolerance from like causes. And where the initial factor is due to accumulation of "waste products," then also by the character and degree of the defective excretion, and the route or channel by which the vital forces attempt its elimination. And finally, since any of the elements hitherto described as factors of contagion are infected through defective excretion, it necessarily follows that the character of an infectious or contagious disease depends upon the variety or nature of that glandular excretion which is most defective, and as these infected elements are most prone to elimination through those glands whose defective function has produced the blood contamination, we are thus afforded the *rationale* of the glandular involvement of specific disease. And if any such morbid elements were still under the dominance of the natural laws of *elective attraction* which appropriates from the blood certain elements to certain tissues or parts of the body, or that normal *repellant force* peculiar to certain excretory glands, their *deposition* in these localities would be secured, or their ultimate *elimination* (if the patient survived) through those glands and parts of the body identical with those from which they have been derived would be effected. And thus again would be stamped upon the disease its "specific" character.

Owing to the great length of the paper, only a part of it could be read, and it was passed without discussion.

(*To be continued.*)

SOCIETY PROCEEDINGS.

Gynecological Society of Boston.

Regular Meeting, held June 9, 1892.

The President, Augustus P. Clarke, M.D., in the Chair.

(*Concluded from page 52.*)

[25] Children's Hospital: The catgut is first scrubbed with yellow soap, and allowed to stand in ether 48 hours, in corrosive (50 per cent.) 48 hours, and finally preserved in the following solution:

Corrosive sublimate, gr. xv;
Glycerine, oz. ijss;
Absolute alcohol, oz. xxxj.

[26] Brunner scrubs the raw catgut with strong potash soap, then places it either directly in corrosive sublimate, 1–1000, or after leaving it one half hour in ether. It is finally stored in the following solution:

Corrosive sublimate,	1 part.
Absolute Alcohol,	900 parts.
Glycerine,	100 "

To test the aseptic condition of gut prepared in this way, Brunner manufactured gut from the intestines of an animal dead of anthrax; some he prepared and used without producing trouble, whereas the raw gut when inoculated into animals, caused fatal anthrax in all cases.

[27] Roswell Park immerses the catgut in benzine or ether; it is then dried and soaked in 1 per cent. sublimate solution for one or two days, again dried and placed in juniper oil and finally preserved in alcohol containing corrosive sublimate 1–1000.

[28] Billroth's Clinic: Catgut is first washed with potash soap, it is then laid in ethylic ether twice for 12 hours each time, then dried and sterilized in a dry chamber by raising the temperature to 250° F. Then it is immersed in a solution of

sublimate 1-1000 for 24 hours; it is kept ready for use in absolute alcohol.

[29]Wm. Goodell: The prepared catgut comes in greasy coils of a dark amber color. To dissolve out the fat these are placed in commercial ether for from 24 to 48 hours, according to the size of the gut; and if the gut is of the larger sizes the ether is changed *once*. The gut is *now* immersed for 48 hours in a 1-1000 alcoholic solution of corrosive sublimate. It is then wound on glass spools by surgically clean hands, and kept permanently for use in a mixture of 2 parts of oil of juniper to one of alcohol, which is occasionally changed. When needed for an operation, I transfer the requisite number of spools to a mixture of one part glycerine, which has been sterilized by heat, to 9 of alcohol.

This gives a greater smoothness and pliability. Thus prepared it will last in the tissues of the body from a week to ten days.

A study of these methods shows the preparation of catgut to consist of several processes.

1. For removing fat, such as scrubbing with soap, and soaking in ether, benzine, or bi-sulphide of carbon.
2. For sterilizing, by dry heat, boiling in alcohol or immersion in antiseptic solutions, or corrosive sublimate, chromic acid, carbolic acid, alcohol or juniper oil.
3. For tanning or altering the consistency of the gut so that it will resist the absorption by the tissues for a longer period, as the soaking in solutions of chromic acid.
4. For rendering soft and pliable, as by the treatment with glycerine.
5. For preserving; storing in solutions of carbolic and oil, juniper oil, alcoholic and watery solutions of corrosive sublimate, and absolute alcohol.

No one method comprises all of these processes, and therefore they may not all be essential for the perfect preparation of gut. Removal of the fat is necessary when the gut is to be sterilized by dry heat but not so in the other methods. If the natural oil of the suture is removed, it is usually replaced by storing the gut in an oily preservative fluid. The removal of the fat, may facilitate the sterilizing of the gut, and at the same time make it less irritating to the tissues, for the same reasons that ointments are abandoned in the dressing of wounds. Fat is not essential to the perfection of a suture, and therefore it may as well be removed.

Sterilizing by dry heat is a sure method; it requires more care; the gut is not so strong as that prepared by other methods. Boiling in alcohol requires less heat than in the dry method, and the tissue is hardened, both by the action of the alcohol, and heat. It is thus made stronger. Soaking in aqueous solutions macerate the tissue, tend toward their disintegration, and thereby weaken them, at the same time it enables the antiseptic substances used to penetrate deep into, and through every part of, the sutures, rendering them aseptic. Lister's method, which has proven quite effectual, owes much of its success to the action of the water in first softening the gut so that it can be thoroughly acted upon by a minute quantity of chromic acid.

Tanning, or hardening of the gut by chromic acid, is one of the processes of decided value, since it renders smaller size gut as efficient as larger sizes prepared in other ways.

Marcy uses Lister's process entirely, whereas Bryant objects to the method, saying it makes the gut resist absorption too long. It must be obvious to every surgeon that there are many instances where it is of decided advantage to have this suture resist absorption. Naphthol acts as a tan. Anything that will increase the pliability of a suture without diminishing its strength must be considered an advantage to its preparation. All animal sutures kept in alcoholic solutions, are apt to be hard and wiry. When soaked in water they become weakened.

If, however, they are preserved in alcohol, to which a little glycerine has been added, or immersed in a solution of glycerine at the time of using, they become soft and pliable.

The final preservation of sutures is important, as the strength depends much upon it. Kyle tested the strength of gut kept in sublimated alcohol and juniper oil, and the *effect of immersion in various solutions*. Gut kept in sublimated alcohol was found weaker than that preserved in juniper oil; this was especially evident by comparison of the larger sizes of gut. The small sizes of gut were of about equal strength. Pure alcohol increases the strength of both preparations; alcohol and carbolic (1-40), equal parts had little effect on gut prepared in juniper oil, but increased the strength of that preserved in juniper oil and immersed 20 to 40 minutes in alcohol, and watery solutions of sublimate, were lessened considerably in strength. Immersion in boiled water weakens both preparations.

From Kyle's test it seems that absolute alcohol increases the strength of the gut, and is its best preservative. Juniper oil is next, while sublimated alcohol is of the least value. Carbolized oil as a preservative has been abandoned in continental Europe.

[30]Drousart devised an operation for the treatment of congenital ptosis, which consists of the *formation of a tendon* out of connective tissue deposited in the track of a catgut suture. Ordinary catgut was absorbed too quickly, 2 to 3 days, so he used that treated by naphthol which [31]Dehenne has found to last twelve to fifteen days in the tissues. Naphthol is used as a *preservative*, and in *certain cases*, as the above, may be of special value.

The most important animal tissues which are used for the manufacture of sutures and ligatures are catgut, tendons from the tail of the kangaroo, opossum, rats, squirrels, whales, rabbits and some other animals. Strips of fascia and certain skins, as buckskin, parchment and chamois leather, also hairs from the tail of the horse. Of these, catgut is the most important, and most universally employed, because it can be so readily obtained, and kangaroo tendon the most excellent, as it is stronger; does not swell in the tissue; from its nature it is more easily made aseptic, and can therefore be more depended upon; and as it resists absorption much longer than catgut prepared in the same way (ratio 1-3), a finer thread can be used when this is of advantage, and in regions, as the cervix, where it is desirable the sutures should hold for a somewhat longer period than usual, the same size suture of tendon will remain firm several days after a suture of catgut has become absorbed. The great objection to kangaroo tendons is the difficulty with which they are obtained, and their cost.

In regard to tendons derived from other animals, many may be easily obtained and utilized to great advantage in all branches of surgery. [32]Dr. E. O. Belt has made extensive use of sutures derived from the tail of rats in ophthalmic practice. The tail is skinned, and soaked in water for several days, when on slight manipulation, it splits into perhaps a hundred fibres, each about 8 inches long. They are placed in alcohol, and about once a month, for two or three days at a time, they are soaked in a 1-5,000 solution of corrosive sublimate. Dr. Belt recommends these fibres in cases where a strong and fine animal suture is required. He says they are much finer than those prepared from the opossum's tail, which he has seen used by Dr. Chisholm.

The fine tendons in the tail of our common rodents are very strong, but they are too short to be used extensively as a continuous suture; however, they can be used as an *interrupted suture* and as a ligature. I have used the fine tendons from the tail of a gray squirrel to close wounds on the face, where it was desirable to avoid scar formation as much as possible. These tendons are as fine as the finest silk, and are very strong.

Discussion.

Dr. George Jones remarked that in the future the animal ligature would be in the greatest demand. He prepares the ligatures according to Lister's method. Whenever suppuration occurred in his practice he had always been able to discover that in their preparation sufficient precaution against sepsis had not been taken. Much credit is due Dr. Marcy for the persistent manner in which he has urged the use of the animal suture.

Dr. Jones stated that quite recently he had boiled catgut in refined petroleum. Dr. W. S. Brown prefers *silk ligature.* He uses the black iron-dyed because the white contains lead. He objects to the use of corrosive sublimate in the preparation of sutures. He also stated that strong alcoholic solutions would do less harm than dilute watery ones.

Dr. Burt prepares gut by Lister's method, diluting the chromic acid solution to 1-6,000, and determines by the color when he has effected this. He keeps the ligature dry, and has never had any trouble from gut preserved in this manner. He prefers the rough material used by clockmakers, because it is of more uniform strength. In the preparation of violin strings, the gut is sandpapered to make it smooth. This treatment renders it weak and unreliable for surgical uses. In operations for the repair of the cervix he prefers silk ligatures.

Dr. Clarke, the President, endorsed the use of the animal suture, and especially the ligature made from the kangaroo as prepared by Dr. Marcy. The speaker had been associated with some of Dr. Marcy's earliest cases, and could bear witness as to the superiority of this method. He further said that the silkworm suture, however carefully prepared, was not at all comparable to that made from the kangaroo. Speaking in reference to the use of the silver suture, he said that its employment often required a second operation which was dreaded by the patient much more than the primary. In his own practice he had never seen any untoward results from the use of animal suture.

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[30] Drousart, Med. News, August 1, 1891, p. 134.
[31] Dehenne, Ibid.
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[33] Clarke, A. P., Jour. Am. Med. Assoc., Vol. xvii, p. 208, August 8, 1891.

The American Health Resort Association.

This Association met at the Tremont House, Chicago, June 30, and held three sessions.

There were present delegates representing Canada, Michigan, Massachusetts, Wisconsin, Florida, New Hampshire, New York, Pennsylvania, California, Illinois, Vermont, Colorado, Texas, Iowa, New Mexico and Central America.

A large correspondence was read by W. A. Chatterton, Secretary, from the absent members in various parts of the country.

The President, T. C. Duncan, M.D., of Chicago, then delivered a lengthy address, in which he outlined the good work of the Association, and how it was appreciated by the profession, enabling them to select climates adapted for the various cases of consumption. From reports received from the winter points, New Mexico had proven the most satisfactory This is of interest to the profession who are trying to save some of the "hundred thousand consumptives" who die annually in this country.

Dr. J. F. Danter, of Toronto, Canada, read a paper on the "Climates and Resorts of British America."

A report on the climate of Manitoba was read, from Dr. Clark, of Winnipeg.

The climate of New Brunswick was presented by Dr. J. Z. Currie.

From these reports it seems that there are a large number of consumptives in Canada, especially in the eastern provinces.

Dr. Adam Miller read a paper on sun spots and magnetic influence in disease.

The climate of Nebraska was presented by Dr. Brown.

The climate of California and its resorts was presented in papers by Drs. J. D. Hartley and S. W. Andrews, of Chicago.

Dr. W. P. Roberts, of Boston, read a report on the climate of New England, in which he reported that 15,000 die annually there from consumption.

"Consumption in Michigan" was the subject of a paper by Dr. Veenboer.

Dr. O. W. Gordon, of Council Bluffs, reported his disappointment in visiting various resorts, and spoke highly of New Mexico.

A report from Dr. A. Petin, of Las Cruces, N. M., formerly of Paris, was read in which he said they had almost constant sunshine, less than 2 inches of precipitation in 28 months, and that consumptives sent there were all doing well.

A report on the Adirondack region was read from Dr. Skinner.

Dr. B. W. James, of Philadelphia, contributed a paper on "Climate Maxims."

The climate of Costa Rica was presented by Dr. Buchanan.

Dr. A. S. Butler reported on the climate of Honduras.

"Texas as a Resort for Consumptives" was the title of a paper by Dr. Marshall.

Reports on mineral waters were presented from Las Vegas Hot Springs, N. M., Eureka Springs, Ojo Caliente Hot Springs, N. M., Costa Rica and Londonderry.

Prof. I. N. Danforth gave an address on "Mineral Waters, their Analyses and Uses."

He said the profession was being imposed upon by imperfect and fraudulent analyses. In the first stage of Bright's disease he thought that bland water should be used, and in the second Lithia waters.

Prof. W. S. Haines made a valuable report on Bacteria in Mineral and Potable Waters. In some mineral waters he found 2 bacteria to the cubic centimeter, and in some drinking water he found as high as 8,000.

A large number of members were admitted.

It was reported that a Congress of Climatologists would meet in Chicago next year, and it was voted that the Association meet with it.

The following officers were elected: T. C. Duncan, M.D., President, Chicago; J. F. Danter, M.D., first vice-President, Toronto, Canada; I. N. Danforth, M.D., second vice-President, Chicago; W. P. Roberts, M. D., third vice-President, Boston, Mass.; T. S. Hoyne, M.D., Treasurer, Chicago; W. A. Chatterton, Recording Secretary, Chicago; J. D. Hartley, M.D., Corresponding Secretary, Chicago; W. W. Van Baun, M.D., Philadelphia; Prof. W. S. Haines, M.D., Chicago.

The full proceedings and papers will be published shortly and all members will be supplied with these valuable and interesting transactions. For further particulars address

J. D. Hartley, M.D., *Corresponding Sec'y.*
1204 Milwaukee Ave., Chicago, Ill.

NECROLOGY.

Dr. James Sproat Green, of Elizabeth, New Jersey, died on the 1st, instant, aged 62 years. He was an alumnus of the University of Pennsylvania, class of 1851, and a member of this Association since 1872. After graduating he acted for two or three years as an assistant demonstrator of anatomy at his *alma mater.* He was on interne duty also, until 1853, at the Wills and Pennsylvania hospitals, after which time he took up his residence in Elizabeth. He gave special attention to orthopedics and abdominal surgery. He was repeatedly the president of the City Council of his city, and mayor for the year 1877. He was a founder of the Elizabeth

Hospital and a member of the surgical staff down to the time of his fatal attack, which was very sudden, by cardiac disease. He was on the point of going out in his carriage to attend a patient, when he was taken ill and in a few minutes had expired. He stood in the front rank of his profession in the northern part of his State. He had been for four years one of the board of managers of the Lunatic Asylum at Morris Plains. In 1890 he was chosen president of the New Jersey State Medical Society, an honor that befalls only the best and most worthy of the medical fraternity in that commonwealth.

DR. JAMES BARRON POTTER, of Bridgeton, New Jersey, died on shipboard while returning from Florida, on the 11th of June. He was a graduate of the University of Pennsylvania in 1847. He had passed the winter at his plantation near Fort Myers and finding himself to be failing in health, he determined to return to his home by the steamer from Jacksonville. He succumbed by disease of the heart, after the vessel had been about forty-eight hours out from that port. He was in his seventieth year.

NOTES.

AMETROPIA IN HORSES.—In London it has become a recognized branch of the optical business to supply spectacles for horses whose eyes are the seat of some error of refraction. It is claimed as a well authenticated observation that myopia is a prominent cause of the vice of shying, and the value of a good steed may be considerably enhanced by a cheap pair of concave glasses. But it is said that the principal use thus far made of horse spectacles is to make high-steppers of those animals whose walk in life is to be that of the hack or coach horse. While yet young the steed is given a pair of convex lenses set in stiff leather caps, entirely enclosing the orbit. The horse is misled thereby and sees the ground much higher than it really is; this has an effect upon his steppage that makes his motion admired and fashionable for cab and coupé purposes.

RARE FATALITIES AMONG PUBLIC MEN.—Prime Minister Honorable John Robson, of British Columbia, died in London recently in consequence of a seemingly trivial accident. The end of one of his fingers was caught and contused in the closing of a door of a hansom cab. The injured member was the little finger of his right hand. The injury was sufficiently severe to demand the amputation of the finger. Septic symptoms came on and a fatal issue could not be prevented despite the best of attendance. Mr. Robson was not in good health at the time of his arrival in London. Another gentleman, well known in the Conservative party in England, also died in the prime of life, namely Mr. Frank J. Woods, the secretary of one of the leaders in the House of Commons, Mr. Balfour. He died in ten days after being stung by an insect, supposed to be a gadfly. The injury was received upon the lip and was followed by an erysipelatous inflammation that resisted all efforts at cure. The attack may possibly have been one of malignant vesicle or charbon, of which our English cousins, fortunately, see comparatively little.

AN EMINENT LAWYER'S PORTRAIT OF HIS PHYSICIAN.—Hon. Thomas F. Bayard delivered the commencement address before the Baltimore College of Physicians and Surgeons, at its recent twentieth anniversary. His theme was to show the points at which the legal and the medical professions touch in the homes of misfortune and suffering, especially that affecting the mind rather than the body. In his long experience of life, he has witnessed that "brotherhood of the lawyer and doctor at a common fountain," that which never ceases flowing—the fountain of human sorrows and distress. Each profession has its function of cure, and the power of prevention. The necessities of modern social life make the physician the repository of a host of secrets which become sacred to him because these secrets are essential to his full knowledge of his patient's requirements. In enlarging upon these opinions, Mr. Bayard becomes more specific and personal. He refers to his own circle of acquaintance, and sketches the portrait of a physician who has carried consolation as well as medicines into the homes of his Delaware circuit:

"The physician," he said, "who thus relieves sorrow and anxiety by receiving them and sharing them can make no proclamation of his well-doing or the service he has rendered, and if he ever hears an applauding voice, it is now and then, but not always, 'the still, small voice of gratitude.' I doubt if there were any real physicians among the sect called Pharisees. Luke was called 'the beloved physician,' and in his history I find no suggestion that Luke was a Pharisee.

"You will perceive that it is upon the duties and responsibilities of physicians and lawyers as citizens that my comments have been chiefly made, for I never knew a really great physician who was not greater as a man—I mean, whose greatness did not rest upon his personal and moral basis, which elevated and strengthened his professional life, infused itself into the community in which he lived, and was in fact the underlying and pervading cause of his influence and consequent success in his profession. *It has been my personal fortune to know such a man. It has been my privilege and delight to accompany him in visits where his only medicines were the personal presence and conversation of the man himself.* He had shared and had lessened their anxieties; counselled the wayward; had led the sick back to health; cheered the weak-hearted; had 'rejoiced with them that did rejoice and wept with them that wept.' And I have seen such a man so surrounded by an atmosphere of love and trust, holding as it were the heart-strings of a family in his hands, their 'guide, philosopher and friend,' and then I realized what a moral force in society the profession, properly comprehended and properly followed, was capable of exerting, and how relatively small a part of its usefulness was the administration of medicine."

PROPOSED BIOGRAPHY OF THE LATE DR. AGNEW.—Dr. J. Howe Adams, of Philadelphia, has been desired by Mrs. Agnew to prepare a memoir of the late great surgeon, and the friends far and wide who can contribute unpublis incidents, stories, anecdotes, sayings and the like, will confer a favor by promptly sending their quota forward to Dr. Adams. In this respect, as in so many other situations in life, *qui cito dat bis dat*. To be timely and at its best, a memorial of this character should not be allowed to linger in its composition. Those who were his students in the fifties and sixties, and before the *Index Medicus* began to catalogue every bit of printed work a man does, will be most likely to furnish materials that are not already pretty well known to Dr. Adams. About twenty years ago, if we mistake not, Dr Agnew delivered an address before his class at the University, subject "Error in Diagnosis," about which his friends rallied him not a little, on the ground that all the errors for which confession was explicitly made were the errors committed by others, either his colleagues or his forefathers in surgery. He freely acknowledged his own fallibility in general terms, but the illustrative instances, as his friends chided him, were postponed for some other occasion or some other author. The address was a charming and informing one "all the same." It was on that occasion that Dr. Agnew took occasion to refer to the unseemly alacrity displayed b some practitioners to serve as expert witnesses against th fellows, in suits for malpractice. Dr. Agnew did not conten that all surgeons should be shielded, whether right or wrong, but he did maintain that before one practitioner testified against his brother, the former should have made himself conversant with every salient feature of the case in dispute. The man who cannot or will not do this much is unworthy of his place in the profession, and is liable to become a mer breeder of mischief. Dr. Agnew's influence, in this direction, was undeniably wholesome and just, and we trust that Dr. Adams will be able to illustrate it fully and strongly.

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SATURDAY, JULY 16, 1892.

BY-LAW IV OF THE AMERICAN MEDICAL ASSOCIATION.

The Publication of Papers and Reports.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Board of Trustees shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

BRONCHO-PNEUMONIA OF INTESTINAL ORIGIN.

Five years ago SEVESTRE, from clinical observation alone, became convinced that broncho-pneumonia in infancy was occasionally of intestinal origin, and concluded one of his papers in the following language:

> "1. In children one or two years of age (and probably also of other ages), subjected to a vicious alimentation, there may occur a decomposition of the intestinal contents, resulting in a fetid diarrhœa and an infectious enteritis.
>
> 2. General *infection may* follow, and particularly pulmonary congestion and broncho-pneumonia.
>
> 3. Intestinal disinfectants, especially calomel and naphthaline, are the best means of relieving the diarrhœa, and of preventing pulmonary manifestations."

The work of his pupil, LESAGE, we reviewed a few weeks ago. More recently, two others of his pupils, GASTON and RENARD[1] have contributed the results of their work in the same field.

The chief characteristic of the trouble is the occurrence of the pulmonary disorder as a complication in the course of an existing diarrhœa. The cases usually occur in infants who have been badly fed. After more or less prolonged dyspepsia, diarrhœa *sets in and is characterized by frequent stools*, green, white, or yellowish and very putrid. In from two to six days broncho-pneumonia appears, and is ushered in by more or less fever, by cough and dyspnœa. Very young infants lie quietly upon the back or side with the thighs flexed upon the abdomen. While in older children some interest in surroundings is manifested. Often the abdomen is distended with gas and is sensitive to palpation. Gurgling occurs in the right iliac region, and the skin is flaccid and non-elastic. The tongue is white, covered with a thick grayish coating in the center, and red on the edges. The stomach is dilated with gas, and the spleen is often perceptible on palpation. Fever, which is sometimes wanting, varies between 102 and 104 and is very variable. The cough varies a great deal, and the dyspnœa, not usually intense, is shown by respirations varying from 20 to 45 per minute. The physical signs show broncho-pneumonia, but vary greatly from day to day. The disease lasts usually from one to two weeks, but may be prolonged to two months.

The authors describe *four forms of the trouble*: The supra-acute or choleric form; the grave or typhoid form; the prolonged or remittent form; and the light or common form. The first form is rapid and terminates in two or three days, the patient dying in an algid stage. The typhoid form lasts two or three weeks, has a quite constant temperature and rather less diarrhœa. In the remittent form, which SEVESTRE has described very carefully, the temperature remains elevated for two or three days, and then drops for a like period, when it again rises. These exacerbations and remissions may occur for four or six weeks, and each exacerbation is accompanied by a new patch of broncho-pneumonia. The diagnosis is not usually difficult. The appearance of fever and cough in the course of a fetid diarrhœa, in a badly fed or bottle fed baby under two years of age, should raise the suspicion of a broncho-pneumonia of intestinal origin. Generalized bronchitis gives less fever, and no diarrhœa. Frank pneumonia is relatively rare, and should be made out by the physical signs. Pneumonia complicating acute infectious diseases is readily differentiated by the accompanying conditions. Typhoid fever is difficult to distinguish; attention should be given to the rose spots and, in the authors' opinion to the temperature curve. Tuberculous broncho-pneumonia it may be impossible to differentiate.

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[1] Rev. Mens. des Mal. de l'enfance. May, 1892.

Some interesting pathological work on this subject has already been done. LUBARSCH and TSUTSUI, in a case of diarrhœa complicated with pneumonia, have found, in both the intestine and the lung, the *bacillus enteridis* of GOERTNER. GILBERT and GIRODE in a case of cholera nostras have found the *bacillus coli communis*, associated with other forms, during life. CHANTEMESSE and WIDAL in six cases of typhoid fever have found the *Eberth bacillus* in broncho-pneumonia. LESAGE on the contrary asserts that pulmonary lesions complicating enteritis are always due to the presence of the *bacillus coli* in the lungs.

The pathological observations of the authors were made upon twenty-six cases of broncho-pneumonia with infectious diarrhœa. They made cultures from the stools and also from the pulmonary juice, which they obtained by punctures made into a pneumonic spot, during life.

The stools, naturally, gave various forms; among them were observed the bacillus coli communis, bacillus subtilis, bacterium termo, bacillus enteritis of Goertner, and diplococci. Of the 26 broncho-pneumonias examined, 16 gave only a single species of microörganism, 5 showed several species, and from 5 no cultures were obtained. Where pure cultures were obtained they were as follows:

Pneumococcus,	8	times.
Staphylococcus,	3	"
Bacillus coli,	3	"
Encapsulated bacillus,	2	"

The other five cases showed:

Pneumococcus and staphylococcus,	3	times.
Staphylococcus and bacillus coli,	1	"
Pneumococcus and bacterium termo,	1	"

From these observations the authors conclude, 1. That in the majority of cases, broncho-pneumonias occurring in the course of the infectious diarrhœas of infancy, are secondary, and are due to superadded microörganisms, and (in some cases only) are due to the specific agent of the infectious diarrhœa. 2. That in the majority of cases, the specific agent of the diarrhœa, favors by its secretions, the virulence of the parasitic species normally contained in the buccal cavity, and renders them pathogenic.

From further experiments on lower animals, which space prevents our reviewing here, the authors hold, that the bacillus coli is capable of establishing a true septicæmia, which in the infant starts in the intestine, and is provoked by diarrhœa. The bacillus coli passes from the intestine to the lungs by way of the lymphatics and blood vessels, and in this way produces the lesions of these organs.

In the lungs the ordinary lesions of broncho-pneumonia were found and in other organs generally, congestions with tumefactions, or granulo-fatty degeneration of the cellular elements, such as are commonly met in acute septicæmias.

Such observations as the foregoing are very valuable, and exceedingly suggestive. They seem to open the way to a more rational handling of a certain class of broncho-pneumonias. If clinical experience counts for aught, it would seem that the pulmonary lesions of intestinal origin are not limited to pneumonia; but that acute bronchitis is not infrequently traceable to a similar origin.

This work is particularly interesting in connection with the subject of typhoid fever in infancy.

That typhoid fever occurs more frequently in infants than was formerly supposed is coming more and more to be admitted. When it does occur the bronchial symptoms are usually exaggerated, and pneumonia sometimes supervenes. While typhoid in the infant can not be recognized clinically in a given case unless the peculiar eruption has appeared, it would be going too far to say that the absence of the eruption proves the absence of typhoid.

The appearance of the tongue which authors have described, is exactly that found in typhoid fever in the infant, and their grave or typhoid form is highly suggestive of the so-called enteric fever. Again, the relation of the bacillus coli to these cases furnishes food for conjecture, for RODET and ROUX still claim that the Eberth bacillus is but a modification of the *bacillus coli.*

THE "BREATHING" HOSPITAL.

How to make a hospital, or other public edifice where fresh air is a prime desideratum, renovate its atmosphere with proper rapidity is a question which is being answered better and better each year. The *Medical Press*, in treating of some recent devices, says that considerable gains have been made at the numerous public buildings where large fans have been put in, "but the results are generally less satisfactory than those obtained in industrial buildings, mainly because the ventilating engineer is not allowed to handle a public building *so as to make it breathe in the same free way* that is easily permitted in a factory, where æsthetic and other nice points can be left to take care of themselves." This is a most happy expression regarding the free full breath which such structures as hospitals should be competent to take, and take again, at definite respiratory intervals. One of the latest devices that has come up for examination and trial is one in use at Victoria Infirmary of Glasgow, the operation of which is to sift, and at the same time dampen, the inspired atmosphere before it comes into contact with the heating coils. Here we have an analogue of nasal breathing in the human subject, which is admittedly the normal, and as compared with "mouth-breathing" the less dangerous sort of inspiratory act. The nose-breathing of public buildings is contrived in this manner: The air is renewed six times in each hour; before it enters the wards it is filtered and washed by being passed through an air-washing screen of cords, formed of horse hair and hemp, closely wound over wooden rails at top and bottom, forming a close screen sixteen feet long by twelve feet wide or high, affording nearly two hundred square feet of artificial Schneiderian surface. There is a constant trickling of water down and over this screen, rendering it wet at all times, thus aiding in the detention of all dust and soot that would otherwise pass through into the wards. When once these filtered particles have adhered to the wetted cords, a current of air of considerable violence is not competent to carry them through the screen, but the dripping water carries them downwards into the sewer. An additional cleansing of the screen is provided for in the use of the following neat contrivance: An automatic flushing tank, of twenty gallons capacity, is fixed at the head of the screen and timed so as to empty itself once an hour, night and day, and flush away all particles that tend to clog the inlet. The Infirmary is located in a wholesome section of the city, near to the Queen's Park, yet the screen entangles a very considerable number of soot particles from the supplied air. One of the properties of this device is said to be the clearing up of the admitted air in times of foggy weather. Last winter when there were many days of dense fog, the air within the wards seemed peculiarly bright and clean. This nearly rounds out the suggestive simile of the "nose-breathing" system of ventilation, except that the air is warmed before it advances much further—and this done by coming into contact with steam-heated coils. But this is so self-evidently physiological and so wanting in novelty that no further comparisons are needed.

The ducts for the admission of the heated purified air are wide and shallow, cut into the wall about five feet above the floor; their direction is upward. The outlets are at the floor-level. Some analysis of the air, taken at three feet below the ceiling, discovered no organic matter, and the air of the ward generally was exceptionally free from microbes and molds.

The editor of the *Press* suggests that the time may come when the air will be cooled, by the use of ice, during the heated term, as well as warmed in winter as is now done. The claim is made that the patients are absolutely freed from exposure to draughts. Another suggestion is made that fever hospitals, and all places where small-pox and communicable diseases are treated, may so arrange their exit air-ducts that all the expired air shall be burned, or passed through fire, on its way into the outer world. There is at least one organized ventilating company in England which professes to be able to carry out in a practical way the above theories that our public buildings can be made to breathe in a vivifying and purifying manner.

OSTEOPLASTIC THERAPY OF SPINA BIFIDA.

The occurrance of a *spina bifida* without other deformity has been placed (Wernitz) at one in every thousand births. This makes this error of development a conspicuous object of therapy, not only on account of the interest of the parents, but from the quantitative value of the patients. Up to the present time, very poor results have followed except where the boney defect happened to be small. The obliteration of the meningocele has too often been followed by a return of the tumor. This return is due to the stretching and giving way of the muscular and connective-tissue covering of the cord, and these returns give the indication for successful treatment.

The treatment of defects in the spinal arch by an osteoplastic operation was proposed in 1885 and successfully carried out in one case by Dollinger. He divided and brought together the rudiments of the spinal arches in the lumbo-sacral region and succeeded in covering in an exposed cord. Since that time a few cases have been reported at considerable intervals. In a recent number of the *Centralblatt für Chirurgie*, Bobroff[1] of Moscow, reports a very significant operation with a remarkably favorable result. The patient, an eight year old boy, had a considerable defect in the lumbo-sacral arch, and a myelomeningocele as large as a base-ball. It could be depressed so that half the fluid disappeared, when the child complained of pain and syncope. There had been complete incontinence of urine and feces since birth. After the ordinary method of reducing the sack had been accomplished through two lateral openings, a flap of bone with the overlying muscle was raised from the remnants of the arch. This flap was about three centimetres square on each side; with these two flaps the defect was covered and the pieces held in place by bone-sutures. There was union everywhere in a few days and after three months the patient began to control the sphincters.

This happy example of rational treatment should stimulate surgeons to resort to the osteoplastic operations in all suitable cases. It is necessary to remember that most defects in the mural arch are accompanied by defects in the cord itself, and that in order to be successful the surgeon must understand, as an embryologist, the exact conditions under which the defect or arrest of development occurred. In the majority of cases the meningocele will be found continuous with the central canal of the cord and the *cauda equini* will be ribbed out in the cyst wall. The cord itself will be found deformed and unequally developed, and the remnants of teratoids must be looked for. There are, doubtless, cases where the defect in the bony arch is so small that an osteoplastic operation is unnecessary. There are cases in which the defect is so great and is accompanied by such extensive defects in the cord that a successful restoration of the mural arch would leave the patient in a pitiable condition still; but between these two extremes there is certainly a wide field for the procedure.

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[1] A. A. Bobroff. Ein neues osteoplastisches Verfahren bei Spina bifida, No. 22 p. 465—467.

The indications for treatment in these cases are the more imperative from the serious effects which the wearing of a meningocele has on the nervous system, and the uniformly progressive nature of the defect itself. The child's life should not be endangered by the lesser operation, when hope of permanent recovery lies only in the restoration of the bony arch. The child's life should not be endangered by months or years of waiting, because they are months or years of danger of rupture and infection while the bones are becoming more and more difficult to manipulate and the child is growing dearer and dearer to its parents.

Conference of State Medical Examining and Licensing Boards.—The Preliminary Conference of the several State Medical Examining and Licensing Boards of the United States, which was held in Washington, D. C., during May, 1891, demonstrated the utility of such Conferences, and resulted, during the session of the American Medical Association last month in Detroit, in the formation of an organization for the purpose of holding Annual Conferences of the Member and ex-Members of each State Medical Examining and Licensing Board of the Union having such a Board.

The meeting in Detroit elected Dr. John H. Rauch, of Springfield, Ill., President; Dr. Wm. W. Potter of Buffalo, N. Y., Vice-President; and Dr. Hugh M. Taylor, of Richmond, Va., Secretary and Treasurer.

As stated in the constitution, the objects of this organization are to elevate the moral and mental tone of the medical profession, to divorce the medical licensing from the teaching powers, to encourage the establishment of medical examining and licensing boards, to secure harmony of action throughout the Union by the interchange of thought and experience, and to attain, as far as practicable, a uniformity of requirements for practice in the several States.

The Annual Meetings are to be held during the second day and at the place of meeting of the American Medical Association. Active and ex-members of State Medical Examining and Licensing Boards are eligible to membership. No action of the Conference is in any way binding upon the respective boards through the members who may participate in the Conference—the sole mission of the Conference being the diffusion of knowledge relative to the work of examining and licensing boards, and no Board as a board is represented or committed; but the individual active and ex-members participate in the meetings and give and receive information which will help them in their work.

Members and ex-members of examining and licensing boards who have not already connected themselves with this work are cordially invited to signify to the officers their willingness to do so. Such an organization is capable of accomplishing great good. But, in order that its mission may be carried to its highest possible end, it is necessary to have the active coöperation of many representatives from all the boards.

The Surgeon General of Illinois.—We hear and read much in these degenerate days, of the improvement and purification of the Public Service, but it has been reserved for the present Governor of Illinois to show the estimate placed upon professional ability and experience by a thorough going politician. The telegraph informs us that a young graduate of the Hahnemann class of 1887 has been appointed Surgeon General by his Excellency, Governor Fifer, to fill the vacancy caused by the death of General Matthews. The action of the Governor in selecting this inexperienced young person for so important a position is inexplicable on ordinary grounds, but in common with many others, we are of the opinion that the Governor's sincere desire to secure the "finest military medical talent" in the State for Surgeon General, will receive at the polls in November that rebuke at the hands of the profession, which such misdirected action fully warrants.

Errata.—In Dr. Billings' health report, on page 25 of The Journal of July 2, the number of guests at hotels in St. Augustine should read 16,000 instead of 1,600.

The Barnes Hospital and Medical College of St. Louis.—We are informed that the large bequest of Mr. Barnes was for the erection and endowment of a hospital, and was without provision for a college. However, a practical connection of the two institutions is designed, and it is hoped by the friends of the latter to secure all needed funds to make it a first class institution of medical learning.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from July 2, 1892, to July 8, 1892.

Lieut.-Col. William D. Wolverton, Asst. Medical Purveyor, will, on the expiration of his present leave of absence, proceed to Ft. Omaha, Neb, and report in person to the commanding officer of that post for temporary duty during the absence of Major Albert Hartsuff, Surgeon, on leave.

First Lieut Isaac P. Ware, Asst. Surgeon U. S. A., is relieved from duty at Ft. Douglas, Utah, and will report in person to the commanding officer at Ft. Logan, Col., for duty at that post, relieving Capt. William L. Kneedler, Asst. Surgeon U. S. A. Capt. Kneedler, on being relieved, will report in person to the commanding officer, Ft. Mason, Cal., for duty at that station, relieving Capt. Harry O. Perley. Asst. Surgeon.

Capt. Harry O. Perley, Asst. Surgeon, on being relieved from duty at Ft. Mason, Cal., will repair to Washington, D. C., and report in person to the Surgeon-General U. S. A., for duty in his office.

Capt. William Stephenson, Asst. Surgeon U. S. A, will visit the camp of the Illinois National Guard at Springfield, Ill., during the period of its encampment, commencing July 9, and ending August 21, 1892.

Capt. William H. Corbusier, Asst. Surgeon U. S. A., will proceed, at the proper time, to Island Lake, Mich., and visit the camp of the Michigan State Troops, during the period of their encampment at that place, commencing August 18, 1892.

Capt. Henry S. T. Harris, Asst. Surgeon U. S. A., leave of absence granted is further extended one month.

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AMERICAN MEDICAL ASSOCIATION.

SECTION OF PRACTICE OF MEDICINE.

First Day—Tuesday, June 7.

(Continued from page 81.)

The next paper was entitled

RECENT INVESTIGATIONS ON THE ETIOLOGY OF DIABETES.

BY S. P. KRAMER, M.D.,
OF CINCINNATI, OHIO.

The pathogenesis of diabetes mellitus has been a fertile field for speculation. Bouchard was able to count twenty-seven theories of the disease. Nearly all of these have been based upon the classic investigations of Claude-Bernard, on the formation and excretion of sugar in the body. Since the contributions of Bouchardat, the association of diseases in the pancreas with diabetes has been frequently noted; so that Senator assumes that pathological changes in the pancreas occur in about one-half of all cases of diabetes. Baumel maintains that disease of the pancreas is found in all cases; in the milder forms microscopical, in the more severe cases, gross, pathological changes are found. This frequency precludes the possibility of accidental association. According to the view of Klebs, lesions of the cœliac plexus are the cause of this association. Either the disease is primarily in the pancreas from whence it encroaches upon the plexus, or else primary changes in the plexus give rise to circulatory and consequent degenerative changes in the pancreas.

The pancreatic origin of diabetes has been the subject of recent and very important investigations. Minkowski and Mering found that complete excision of the pancreas in dogs produced diabetes without exception. This was not an evanescent mellituria, but a true diabetes accompanied by polyuria, polydipsia, and polyphagia, loss of weight and strength, notwithstanding the excess of food given. The excretion of sugar begins immediately after the operation, reaching its highest point—5 to 10 per cent.—in from 24 to 48 hours. Aceton, acetic acid and oxy-butyric acid, are also found in the urine. The amount of sugar in the blood is also increased up to .5 per cent. The glycogen in the liver and other organs disappears to within a trace of this substance. Partial extirpation, as long as the remaining portion is not smaller than one-tenth of the entire organ, does not produce the disease. Ligation of the pancreatic duct is also without result; so that the conclusion is made that the disease is produced by the absence of some principle given off from the pancreas to the blood supply. Similar experiments in the cat and hog were followed by like results. In birds total excision of the pancreas does not produce diabetes. A confirmative case in man has also been reported. A patient of Dr. W. T. Bull died of diabetes after the excision of the pancreas. Minkowski has also given us valuable therapeutic investigations on this point. Dogs, rendered diabetic by excision of the pancreas were fed with a pancreas and pancreatic extract, without result. On successfully transplanting pieces of pancreas in the abdominal wall of dogs in whom this organ had been previously removed, the occurrence of diabetes was prevented. The subsequent removal of these transplanted pieces was followed by the occurrence of the disease. He found further that upon feeding diabetic dogs glucose, the entire amount of sugar given was excreted. When, however, lævulose was given, this did not occur, but the sugar given was used up by the organism. Minkowski's experiments have been confirmed by Hédon. Lepine and Barral have also confirmed the experiments of these authors, and from their investigations on the sugar in the blood of normal and diabetic animals, seek to advance the ideas of Minkowski and Mering a step further. They found that the blood of normal dogs when kept for one hour at a temperature of 39° C. showed a loss of from 20 to 40 per cent. of the sugar present. The greatest loss of sugar was found when the blood was kept at 39° C. This loss was found to be prevented by the previous heating to 54° C. In man a similar loss of 25 per cent. was found. Five experiments with the blood of diabetic patients showed a loss of 1.6 to 7 per cent. under like conditions. In diabetic dogs there was found a loss of about 6 per cent. The lymph of the ductus thoracicus, and the blood of the portal vein had a much greater sugar-destroying or glycolytic power than the venous blood in general.

From these experiments the authors have built up the following theory:

In the normal condition, the pancreas gives off to the blood supply a glycolytic ferment which causes a destruction of the sugar absorbed. When the pancreas is removed or diseased, this ferment is deficient and the normal destruction of sugar does not take place, but remains in the blood, and is excreted through the kidneys. They found the ferment to be chiefly contained in the white blood corpuscles. The power of the tissues to destroy sugar is ascribed to the glycolytic power of the blood.

Arthus, in repeating these experiments, found that the glycolytic power of the blood did not become manifest when coagulation was prevented by retaining the blood within the jugular vein of the horse, as in coagulation experiments. Moreover peritoneal and pleural transudates showed no glycolytic power. He concludes that glycolytic ferment is not to be found in the vessels, but is due to post-mortem changes which occur under similar conditions as attend the formation of the fibrin-ferment.

In a large series of experiments with ox blood at the chemical laboratory of the University of Cincinnati, the following was found: Both defibrinated blood and a mixture of three parts of blood and one part of a saturated solution of sodium sulphate, showed a glycolytic power. This, however, is not manifest during the first hour, is slight (10 per cent.) during the second hour, and becomes greater (20 per cent.) after four to five hours at 39° C. After twenty-four hours at 23° C. (decomposition being prevented by the addition of thymol), 75 per cent. of the sugar added to the blood had disappeared. It was found, moreover, that a temperature of 55° to 60° C. did not affect the glycolytic power of the blood. On the contrary it seemed to increase the amount of sugar discharged. Thus a loss of 14½ per cent. of the sugar added was found after an exposure to a temperature of 56° C. for one hour.

From the result of a series of experiments which will be published later, I am of the opinion that normally, a combination of the sugar and the albuminous principles in the blood takes place, in which form sugar is rendered suitable for the use of the organism. In the diabetic condition, this change does not take place.

The following may be added as a strictly true summary of the various investigations upon this subject: In the normal condition, the pancreas gives off a principle to the general blood supply by which the dextrose absorbed is so changed that its combustion by the organism is rendered possible. When the pancreas is removed, this change does not take place. The sugar is not utilized, but is excreted in the urine. The exact nature of the active principle and the change brought about by it remain a matter for further investigation.

Dr. Fell, of New York, reported a case of abscess of the liver which had come under his observation in Buffalo. In some manner the abscess was ruptured, the contents passing into the intestine. The man had diabetes before the rupture; but after the rupture the diabetes passed away. From this incident as well as from many other well known facts and the observation of other cases, he thought that we have more than the pancreas accountable for the production of diabetes and that the liver had very *important power in* this direction.

Dr. Cohen, of Pennsylvania, remarked that Lancereaux divides diabetics into the two clases, fat and lean diabetics, and confines the pancreatic form of the disease to the lean diabetics. In the fat diabetics, lesions of the pancreas have not been found. There is still another class of diabetics, namely, those which bear a close relation to the uric acid formation. It would be very unwise, therefore, to say that these theories absorbed the whole question of the etiology of diabetes. The important features of diabetes are rather the polydipsia and the polyuria, and not the mere presence of sugar. There is another form in which sugar is absent, but the polyuria and polydipsia follow a fatal course.

Dr. Kramer, in closing the discussion remarked that his theory was not a universal one, but was offered only in explanation of certain cases in which disease of the pancreas is found. These, however, are the typical cases of diabetes, attended with polyuria, polydipsia, emaciation and continuous presence of sugar. All these features are *not found in* the other classes of cases that have been referred to.

The next paper read was entitled

LA GRIPPE.

BY JOHN E. LINK, M.D.,

OF TERRE HAUTE, IND.

C. H. HUGHES, M.D., *Dear Friend:*—I have been much interested in your article, published in THE JOURNAL of February 27, 1892, on "Influenza as a Neurotic Disease."[1]

Since my first experience with the disease in the winter of 1889-90, I have regarded it as one of depression of the nerve centers, anæmia of the ultimate brain cells, as I conceive it. That the disease dates from the onset of fever and chill, or influenza, I am and ever have been seriously at a doubt. Patients marked out for such phenomena are for weeks prior to such attacks the subjects of langour and paleness of countenance. Many of the cases in this locality have almost entirely escaped fever and rigor, a few having little or no cough, all more or less suffering from neuralgia about the head or face, mostly, as they express it, a pain in the back of the head. In the majority of cases that I treated prior to December, 1891, I was enabled by the use of quinine in doses of three grains every three hours during the day, the dose to be doubled at bed-time, to keep my patients up and about at their usual avocation. The treatment had to be continued for at least two weeks; but I found that they invariably relapsed in about one month, showing again the malaise with paleness.

In May, 1891, I commenced the use of strychnia in connection with the quinine in gradually increasing doses,[2] with some benefit, as I was fully convinced but the difficulty of keeping patients up and about on continuous dosings was considerable, and in most cases they would neglect, until the paroxysm of la grippe sooner or later overtook them. Up to the time above indicated and on until the following winter, I saw no cases of serious lung involvement, as the season was mild.

I, first, in my own sickness, recognized the severe paroxysm of coughing as neurotic and bronchial. I had enjoyed most excellent health and had come to regard myself as exempt from the affects of the malady, until in December, without recognizing the cause, I found myself gradually becoming lazy with increasing desire and impulse to seek the recumbent position. I yawned frequently, a habit that I in others abominate, and tried unsuccessfully to overcome. These feelings increased towards evening and were overcome or dispelled by a glass or two of beer or light wine. I slept unusually well for me and was slow to rise in the morning. This state of affairs had lasted for a fortnight or more, when I was subjected to an unusual strain of physical exertion and exposure by being called to a small railroad station, which I reached at one o'clock at night and then took a buggy and drove through snow and sleet over heavy country roads a distance of several miles to see a poor wretch who had been stabbed in the abdomen. He lived in a miserable old log house but half chinked and daubed, no place to take rest, although I was completely exhausted and worn out. I was driven back to the station, took a freight train for home, arriving at about seven o'clock in the morning. I found business pressing so that I got little or no sleep, until one o'clock that night, when I retired. I dropped into a light sleep, but awakened in half-an-hour with a chill and an incessant desire to cough. The irritation in the larynx was so intense that it seemed nothing would give relief but the expulsion of the mucous membrane. It was more like the irritation or itching of eczema, from which I sometimes suffer, than anything else to which I can compare it. The chill continued for at least four hours. Hands and feet, in fact the whole extremity was cold, chilly sensations over the body, with the most excruciating pain in the chest, a feeling as though the flesh were being pinched and torn with blacksmith's tongs. The chill was followed by very slight fever. The severe pains disappeared with the cessation of the chill, after which the cough was slight, with small mucous expectoration streaked or colored with blood—a pinkish or strawberry juice—at no time prune-juice-expectoration. The case was at once pronounced pneumonia by several persons who saw it. To a physician I declared my non-belief in the pneumonia diagnosis. I regarded the whole phenomenon a neurosis of the pneumogastric center, both the cough and vomiting that accompanied it and continued after it subsided; the discoloration of sputa a result of extravasation from high arteriole tension from straining in excessive paroxysm in coughing, as one frequently sees in whooping cough.

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[1] We mus [illegible] expect from such conditions innumerable phenomena [illegible] fertile harvest of physiological data for scien [illegible] observation, study, reflection, in which the [illegible] his microscopic menagerie of diminutive curiosities is not [illegible]

[2] Thirty sul-strych. parvules, 1-50 gr. three times a day, to be refilled with 1-40, 1-35, 1-30, 1-20, up to 1-16.

In my case no treatment was administered, as I was alone in my room and became unconscious after the chill left me at five o'clock in the morning. I lay upon a narrow bed and remembered but indistinctly of vomiting, first on one side of the bed and then on the other, as I happened to lie. I was too much prostrated to give an outcry and had to keep closely wrapped in an effort to keep warm.

The next day my friends found me, at about 10 A.M., in a sad plight. I lay upon my back, the ejecta from my stomach, which was simply mucus or serum, had run down on either cheek and dried, after soaking the pillow.

My treatment for the first day was hot milk, as hot as I could take it into the stomach, with large quantities of black pepper, which gave me comfort and great satisfaction. And here I will now state that I have every reason to believe that hot milk is our best stimulant in the depression from this malaise. Towards night I indulged in free and frequent doses of a strong decoction of composition powders.

At night there was a return of the bronchial irritation with paroxysmal cough, which was entirely dispelled after taking four five grain quinine capsules, at intervals of fifteen minutes. After the third, fifteen grains, I felt much relief, and after the fourth, a glow of warmth seemed to pass over my body and lower extremities, and I slept soundly, feeling quite well and a convalescent the next morning.

I remained in bed for several days most of the time. When urgent necessity demanded I would take ten grains of quinine and visit a patient. In five or six days after the paroxysm, I went to Grant Station, a distance of nine miles on the I. & St. L. R. R., and visited a patient, with no seeming bad results; though I took fifteen grains of quinine at one dose before starting, I felt none of the usual bad effects of an overdose of the drug. As soon as I returned I again went to bed. I felt then (and clinical observation has since convinced me) that the recumbent position was all that was necessary or required to rest the circulatory centers and with this, conceived there was little else to be done so far as the neurosis was concerned.

I have since sought diligently and have found no cases of true pneumonia, and I doubt extremely if such condition, can possibly obtain under the physiological conditions of la grippe—the grip phenomena. It seems to me that the physiological conditions of the vasculatory system forbid it as even a possibiliyt.

I have seen no cases of cellulitis; wounds heal slowly or refuse entirely to heal under the profound malaise.

The lung symptoms are a false pneumonia. The bronchial irritation a neurotic condition with serum poured out into the bronchioles from a relaxed condition of the vessels, as we see it in local sweating in typhoid fever, etc. So again we may have a pouring out of serous fluid into the plural cavity. This fermenting breaks down and a rotten serum is discharged on tapping, as has occurred in this locality with la grippe cases.

I would offer this suggestion, based upon my own personal experience and clinical observation; that the disease has its seat primarily in the nerve centers, principally within the medulla oblongata, the pneumogastric being the first or principal nerve involved with that of the cervical sympathetic.

This ground I took immediately after my own sickness, based upon the peculiar suffering and phenomena of neurotic or spasmodic cough and vomiting. I believed that that alone could account for the peculiar manifestation of irritation, pain and spasm, with its immediate subsidence under large doses of quinine, which I have successfully used ever since, with the substitution after twenty-four to forty-eight hours, of salicylic acid, fifteen grain doses rubbed up with acacia to a heavy emulsion, with pepsin as a stomach adjuvant and bismuth to combat the bowel complications, which I can only understand as another result of the same nervous depression. First a failure of nerve energy to do the stomach digestion, with possibly a special depression of the vaso-motor system, manifested in the pale skin with disturbed heart action, and other phenomena which I have observed, namely disturbed menstrual function. A more frequent tendency to abortion, with a decided falling off in the birth-rate as shown in the statistics of France, for 1891. All of which I think we can physiologically attribute to a fault in the sympathetic centers, having origin in the medulla and expression through the cardiac plexus and vaso-motor distribution.

There have been a few cases of cerebro-spinal meningitis reported by the local physicians here, but I have not seen them and cannot speak advisedly; but should rather look for and expect effusion as the cause of such phenomena, the result rather of a relaxed condition of the vascular tissue than from inflammatory products, or it may be as Dr. Mitchell, formerly of this city claims, that all such are neurotic and of rheumatic character. Paper published about 1870, and extensively noticed in the medical journals.

But my principal object in writing is to call attention to what I believe to be a glaring mistake on the part of the profession at large, in regard to the etiology of the disease as manifested in the lung, and that in such mistakes fatal results must necessarily result to a greater or less extent.

My course of treatment has been as above indicated, excepting within the last six months—the enjoining upon the patient of absolute rest in the recumbent position during the acute stage—if I may so designate it—for I believe, as you seem to imply in your article, that there are no sequelæ of the disease, no pneumonia, so-called, "following grip"; but the disease has not run its course, in the majority of cases, if in any, but so far as we might judge, only held in check or abatement in its violence, to be again manifested in some weaker spot under some new depressing influence.

Whether the discrasy is toxic, or an enfeebled condition from a lack of the elements necessary for the maintenance of the higher order of organic life, I do not here pretend to say. That there may be a condition of our planet, brought about by the peculiar relations with others of the solar sytem,[3] and in extended thought of imagination, the solar system with other systems, that have so changed our elements that they are poisonous—or impoverished, I do not say; but in consideration of the unusualness, as well as the universality of this discrasy, I do say that the matter is worthy of thought, and I here present it, not so much in the hope that it may possibly be in the power of man and his means of investigation to determine the facts within this possibility, as the other thing of emphasizing my views as to the trouble having its seat within the laboratory of the cells, either of the inhibitory, or force phenomena—or both.

I have had no cases of death excepting in one or two cases of very feeble old persons, where death was more the result of senile, than of grippe influence; but in a large proportion of the cases that I have had the history of, excepting in the acute lung involvement, death has occurred while the patient was in the erect position, most were sitting up, but quite a number were standing, and a few were walking around, when they suddenly, and without a struggle, died. In these the report of "cause of death" read "heart failure," *notably* Wm. Astor.

I believe that all patients will convalesce more rapidly with rest in the recumbent position, with hot milk as a stimulant and diet, than with medicine, the patient being allowed to move about.

Something of the nature of a disease can often be learned by noticing the effects of certain therapeutic agents.

There is in many of these cases a tendency to looseness of the bowels at all seasons (though neither copious nor frequent, there is a fluid condition of ferment) amounting to serious diarrhœa and dysentery during the summer and fall months.

I have been in the habit of giving sweeping cathartics—preferably castor oil, with a view to the hygienic effects, and in all cases the offensive smell of feces and quantities of gas have confirmed my belief that there was a ferment, which I can only attribute to the suppressed normal secretion and digestive process generally, but probably, I think, more especially of the stomach.

I can, too, understand why quinine and salicylic acid, especially the latter, should manifest good results in the anti-ferment rôle, in addition to its nerve influence and prophylaxis against neurotic complications. And here it seems to me is food for thought in regard to the part taken in physiological derangement through central nerve influences, as compared with the germ theory of disease now the fad of a large—too large—proportion of our investigators, and voiced by the masses.

I have had in my experience of the last eighteen months three or four cases that I think are worthy of note and consideration.

I have been in the habit for years of giving strychnia in gradually increasing doses in certain forms of nerve trouble; where the drug is indicated, I give a solution of one-half grain of strychnia to the ounce of water. Say commence with about twenty drops three times a day, to be increased one drop each day until the physiological effects are manifested in the muscles of the back of the neck, then drop back to one-half and on up as before.

Three patients that I now have in mind have persevered in this course of treatment for over one year with gradual improvement of the nervous and muscular system. One has taken as high as one hundred and ninety drops three times a day. The other two have gone as high as one hundred and eighty drops. One other continued for six months. Of the three still under treatment, not one has shown the slightest indication of the grip, either in paleness or neuralgia, and they have each assured me, that of their personal acquaintance they know of no one else that has escaped. My wife's mother is one of the number, and of a family of ten, she is the only one that has not had the disease in some one or more of its forms.

It does not seem that this can possibly be a mere coincidence, nor would one readily adopt so radical a treatment as a preventitive, but I think it should have its place as data of clinical experience in making up an opinion as to the pathology of the disease.

I think I can safely affirm that we are now more than ever before learning a most practical lesson in the value of strychnia, as it seems all observers place this drug in the very front rank in the treatment of *the depression of the so-called grip.* The value of the drug in diseases of the structures presided over by the nerves of organic life has never, I fear, been fully appreciated. For physiological data see text-books on predominance of motor-efferent-fibres over sensory.

I have seen quite a number of cases that on a casual observation caused me to seriously fear that I had a case of true pneumonia to deal with—the short catchy breathing, with flushed cheeks, etc. [In this particular I must be allowed to differ with Dr. Patton. See differential diagnosis of la grippe in article on pneumonia in JOURNAL AMERICAN MEDICAL ASSOCIATION, March 5, 1892.]

But on careful auscultation, there was something in the râles differing from those of pneumonia of the croupous or congestive form. They were more generally diffused, more or less in both lungs, and there was decidedly lacking later the characteristic dulness manifested on percussion. The sputa, if discolored, was a strawberry—not prune juice sputa, and upon the administration of 5 to 8 gr. doses of quinine every fifteen minutes, I had the satisfaction of seeing my patient turn upon the side and drop off into a natural sleep, after the third or fourth dose—the breathing full and regular, and on applying my ear to the chest, to my entire satisfaction and almost incredulous surprise, I would find that the crackling sounds had disappeared. On awaking, the patient would declare that he was entirely relieved—the phantom pneumonia a thing of the past.

Neither have those cases that I have any knowledge of had the prolonged convalescence of true pneumonia, excepting cases of abscess. I have examined quite a number that were so diagnosed, and have found in none the crippled lung of pneumonia, but one case of abscess of the lung, with cavity.

Again, death has supervened in many cases of people of note in a few hours after the attack, said to be pneumonia, if newspaper reports can be relied upon, following an attack of the grip, notably Lawrence Barrett.

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[3] See Hicks in [illegible] Works" for April, 1892 Disturbance of the Saturnian equino[illegible] ower of Jupiter, which he states has not yet reache[illegible] years predicted disturbance of pestilence, etc.

Is it usual for patients to die of a congestive and inflammatory lung disease in a few hours? I think not.

Now, if these cases are mis-diagnosed, is it not likely that the treatment is also at fault? If it is a neurosis—neuralgia of the pneumogastric nerve, and death, as it seems to me, when occurring in the acute stage, the result of shock from severe pain, or heart failure from lack of inhibition, the case is clear that none of the ordinary remedies applicable to pneumonia would be sufficient to reach the disease or save the patient's life.

I do believe that full doses of phenacetine or antipyrine, with guarana, will have a tendency to save life by relieving, as I am sure they do, the neurotic pain; and with sedative doses of quinine and salicylic acid—first the one and then the other—will tide the patient over, or in other words, relieve the pain, and after this the recumbent position with milk diet will see the patient safe through, and with proper caution as to diet and judicious care as to over-exertion, a patched-up recovery can be relied upon.

I sometimes doubt if we will ever entirely recover our wonted vigor—sure it is that gray hairs are added to those who have passed the fiftieth milestone of life—and *they* have come to stay. And now let me suggest that if this is a neurotic disease, as I believe you have proven in your able paper, is it not well to reconsider the whole pathological field? And in recent clinical experience of this disease, as well as by analogy, do we not prove that grip is not a disease of connective or cellular tissue? Is there a cellulitis resulting in abscess? does it produce abscess? Is the congestion engorgement of the vessels with swelling or abscess? or is it like neuralgia and kindred diseases, a non-congestive disease, a neurosis in every sense of the word? Inflammatory rheumatism is an inflammatory neurosis, but the same condition existing in the lung would not be a pneumonia. So of la grippe influenza, its pathology is of an entirely different character from the condition of the tissues of the lung recognized as pneumonia proper.

I have frequently been called to act in a surgical capacity, where abscess with periosteal involvement existed as the result of cases diagnosed inflammatory rheumatism, but I never recognized the diagnosis as correct. Neither can I with consistency accept an involvement of the lung in an inflammatory neurosis as pneumonia, neither can I understand from my personal observation, clinically, how there can be coagulated lymph deposit from a neurotic inflammation, such as we see and recognize as la grippe; but we can have an outpouring of serum from relaxed tissue, as manifested in local sweating and in the watering of the eyes from intense neuralgic pain, and from such phenomena I can understand how there might be an infiltration into the pleural cavity and into the bronchioles of some part of the lungs, causing circumscribed dulness and resulting in abscess through mechanical pressure and paralysis, as witnessed (in a more extended phenomenon) a few days since in the corpse of a young man who had died but a few minutes before, sitting up in his chair, where I found him. In this instance it seemed clear to my method of reasoning that death was the immediate result from asphyxia, the lung being flooded with its own serous extravasation. Laennec taught that pulmonary œdema may occur as a primary condition causing suffocative orthopnœa, but whilst this case was one of clear orthopnœa—the patient having risen upon the feet and even made efforts of jumping from the floor, crying out "I feel so strangely, I am smothering"—yet I believe there are conditions here brought about by a loss of power within the pneumogastric nerve so nearly approaching total paralysis—not quite equal to the severance of the nerve, in which sero-sanguineous fluid infiltrates the tissues—but so near it as to dilate the vascular system, allowing only the pure serum or water of the blood to filter through. When he was laid upon a lounge, the clear serum first bubbled from his nostrils, then with the effort of resuscitation, in pressing upon his chest, it came in gushes from both of the nostrils, until at least two quarts were discharged before I left him, and still it continued, if considerable force was used in pressing well down upon the sternum. This man "had had the grip," had not been confined to his bed, but had been up and around, though "as pale as death," as expressed by one of the family.

This is the grip and not a sequence of it. It is the disease, unrecognized and neglected, I fear, by the profession which the people rely upon for advice in sickness and for the prolongation of life, and whilst I am no writer and slow to put myself in print, this thought has pressed upon me until I am constrained to give it utterance through a medium that I believe capable of giving the matter that consideration which its importance merits. Therefore I lay it before you to judge of its merits, and give it such notice as in your judgment you think best.

Since writing the above I have had two cases of note. One in corroboration of the lung theory advanced above, in the person of a little girl 9 years old. The whole family, with the exception of the mother, had suffered more or less from the grip, this child being the last to take down. She has a history of what they call "tisic" since she was a baby. She has shown lung trouble whenever she contracted a cold. The cough was a marked symptom for two or three days of her sickness prior to the time I saw her. She had taken quinine in moderate doses, until at the time I was called the stomach had rejected it. I ordered a mixture composed of antipyrine, 25 grs. to the oz. each of elixir of guarana and paregoric, to be given in teaspoonful doses, in a mistake, I thinking there was twice the amount of antipyrine to the dose in the quantity given. The patient continued in a condition to create alarm on the part of the family, so that I was again sent for. I found the breathing catchy, about 60 to the minute, the countenance pale, with a flush on either cheek. She lay prone upon her back, as in such cases with extreme exhaustion. There were crepitant râles over the whole aspect of both lungs, but no dulness in any part on percussion. I doubled the dose of medicine as above given, and left the house for half an hour to visit a patient in the neighborhood. When I came back, there was evidence of marked change in the improvement of the symptoms. I repeated the dose, and in less than one hour from the time of taking the first dose, she had turned on the left side and was in a healthy sleep, such as she had not before enjoyed for two days and nights. The breathing was full, easy and regular, with scarcely a bronchial râle to be detected, and she is now, two days later, comparatively well, with no pneumonia or other lung symptoms. Salicylic acid in 8-gr. doses was substituted for the quinine, but the restoring influence seemed to be from the anti-neurotic effects of the antipyrine, combined with the stimulant and anodyne effects of guarana and paregoric.

The other case (as showing the pneumogastric involvement with its expression upon the heart, with possibly an involvement, also, of the sympathetic fibers entering into the cardiac plexus, all having their origin in the medulla), was that of a passenger conductor on the Vandalia system, running out from here to Indianapolis and return, both ways about 146 miles.

He had suffered for a year or more with the grip in mild form. He was a neurotic subject, all of his brothers having died of consumption. His mother had eczema all her life. His height is about 5 ft. 11 in., and his weight 120 lbs.

At about 1 o'clock at night he awakened his wife and son, telling them that he thought he was dying. He was somewhat confused and made some effort to move about, but was prevailed upon to keep quiet. He said the trouble was about his heart. I was called and reached the house about 1:30. I found a fluttering pulse-beat, which after repeated effort I was enabled to count by tens, his son holding the watch. I made out in two successful efforts 200 beats in fifty-seven seconds. I gave him at once 10 grs. of quinine and a mixture of antipyrine 7 grs., 2 drachms of elixir of guarana and a tablespoonful of paregoric. In thirty minutes the patient began to realize a sense of relief, and the pulse-rate had perceptibly diminished frequency with increased volume. The dose as last described was repeated, and in half an hour the pulse was still further improved to 140, with good wave. The patient dropped off into a natural sleep. I visited the house at 11 o'clock the next morning, and was informed that with some difficulty my patient had been prevailed upon to give up his run at 7 A.M., and was then up town on business. He returned whilst I was still at the house. His pulse was 116 and he declared he felt quite well, only a little weak. After resting half an hour, the pulse dropped to 96. I took the pulse two weeks later, 86—and he is constantly on duty, running 146 miles a day, as passenger conductor on Indianapolis train.

I believe the only remedies in all such cases are those applicable to neuralgia—sedative doses of quinine and salicylic acid, as above indicated, when the urgency of the case does not call for more prompt relief, as in the last cases. Antipyrine with guarana has been my preference, for the relief of pain and other discomforts neurotic in character; though with a limited experience, with phenacetine, I believe as good results might be obtained.

The prejudice existing against antipyrine has, so far as my personal experience goes, no foundation in fact. With the combination of antipyrine and elixir of guarana, I have no hesitancy in increasing the dose all the way from 8 grs. up until the desired result is obtained. I have had just as gratifying results with the remedy where there was the depressed or diminished heart's action, with pain and paleness, as in the increased with pyrexia.

I would propound numerous questions to the profession, but when I come to select, I find that one so intimately involves another, which with the necessity of elaboration to make each one intelligible in its bearings, I find it only possible here to give a few points in elaboration. But first, if the disease now prevailing is not one of neurosis, or from anæmia-starvation, or depression of the central nerve cells, why is this stage of paleness precedent to the expression of either influenza or la grippe? The former a catarrh of the air passages of respiration, the latter the expression of neuralgic pains in different parts of the body, possibly more frequently the chest. If this is true, as I have observed, that paleness precedes such attacks, is it proper to designate the other expressions, as those of pneumonia, falling out of the hair, diseases of the alimentary canal, the reopening of old syphilitis, neurosis, etc., *ad infinitum*, as sequelæ of la grippe, or are they part of the phenomena of the disease or state of central depression, and the influenza and la grippe, one and a part in common with the others indicated? My cases of dysentery of last summer, when an epidemic raged here, were all treated with grip remedies (with little variation from that used in the lung influenza) suggested by the characteristic paleness of countenance and tongue, with the neuralgic pain in the back of the head. Some of them "had had the grip," as they expressed it. All yielded readily to the salicylic acid treatment in combination with subnitrate of bismuth, with the pepsin which I always find best to combine with the large doses of salicylic acid, as stated above. If this paleness with malaise does precede the attacks of influenza, is it logical to assume that the other phenomena of inflammatory neurosis are sequelæ of the grip? It seems to me that we are here taking effect for cause, and that la grippe *per se*, is only one expression of a cause first manifesting itself in the brain cells, especially the medulla oblongata, the seat of the pneumogastric and vaso-motor, with possibly—in fact most probably—some of the centers in the cord. I do not believe that the disease is one of pyrexia, neither psychosis, influenza, neuralgia or myalgia. The only symptom that I can conceive as characterizing the prevailing epidemic is that of paleness of the countenance, with a peculiar whiteness of the tongue, which is not in the early stage coated or furred, but has the appearance of having been soaked in milk—the surface in its whiteness suggesting to my mind that comparison.

That alone can account, it seems to me, for the "babble" of confusion expressed in the literature of our journals from various sources of authority, of men in high places. One will speak of pneumonia following grip, another of the differential diagnosis of la grippe and pneumonia, œdema of the lungs, pulmonary congestion and hypostatic congestion, etc. [See for latter an article in THE JOURNAL, Chicago, March 5, 1892.]

In conclusion, for I am now far beyond my intended limit in the letter, or paper, as you please:

I place the seat of the disease principally in the medulla, with its first expression in the sympathetic nervous system, as manifested in paleness; next a neurotic condition of the pneumogastric, as manifested in coughing, vomiting and pain, with later possibly an extension to the spinal cord, manifested in neuralgia, myalgia, etc. The psychosis may be only an expression through feeble or depressed vital force, exciting or inducing to insanity those formerly so affected or predisposed, in the same way as eczema, syphilitis, etc., returned.

Since commencing this article as an open letter to my friend Dr. Hughes, I have elaborated, as clinical experience and research into the journalistic literature of the subject have given data, until the present, having no cause to change, but much grounds for adding to until the time, first, of presenting it to the Vigo County Medical Society for criticism, and since its reference to this body, I have been somewhat at a loss to formulate my opinion so as to give to the disease a comprehensive designation.

It seems to me that the epidemic now prevailing can be designated by no better name than an epidemic malaise, manifesting itself in various neuroses, each differing from the other as controlled by climate or season, individual weakness and predisposition. Adding to what I have before written as to its non-specific character of influenza—catarrh, nor la grippe, sudden seizure, neuralgia and myalgia, neither psychosic nor pyrosic; but that individual cases may go on to the fatal termination of heart failure or pneumo-hydrix (name coined for want of a better, meaning water or serum within the air cells or bronchioles) cited; and what has been claimed as "the depression following grip," without the previously recognized manifestation called grip: I wish to call your attention to an editorial in THE JOURNAL, Chicago, of April 9, 1892, which I think has a strong bearing upon the subject, but falls short in its range of comprehensiveness. The writer, after referring to the sad fate of an eminent writer and teacher of our guild, speaks of the necessity of a spring vacation, based upon the fact, as stated, that doctors for the last two or three years do not stand the winter's work as formerly, says: "Malaise and a propensity to lassitude indicate that many a hard-worked physician may be under the epidemic influenza without being *sick* (italics are mine) enough to give up work."

It occurs to my mind here that a like thought and interest on the part of doctors would show them that others, as well as his brother, were entitled to and need the same consideration; that though not sick with pain and fever they, too, need rest or treatment, if not both—else, as in the instance of the eminent brother referred to, "the doors of the insane asylum—or the coffin lid—will close upon them."

This was followed by a paper on

A MODIFIED FORM OF CONTINUED FEVER FOLLOWING THE EPIDEMIC LA GRIPPE.

BY JOHN H. HOLLISTER, M.D.,

CLINICAL PROFESSOR OF MEDICINE, CHICAGO, ILL.

The remarkable epidemic of influenza which appeared on the confines of Russia in the autumn of 1889, and which during the following winter spread over nearly the entire area of the two Continents and which, in like manner and with even more fatal results re-appeared in the winter and spring months of 1890 and 1891, was conspicuous for the rapidity with which it traversed the two hemispheres, for the added intensity which it gave to our ordinary diseases and for the profound and prolonged prostration of those of its subjects who survived its fatal effects. Its differential diagnosis was the more difficult, by reason of its simulation of the ordinary symptoms of our endemic diseases. The numbers of our people that were affected, the unusal severity of their sicknesses and the alarming fatality which resulted therefrom, was proof beyond question that this epidemic was exerting a most profound influence upon every form of disease which we were called to treat, but by what agency or in what manner such result was accomplished, the most astute and scientific of observers were unable to determine.

It will not be the purpose of this paper to discuss either the etiology or the pathology of this disease only in so far as it shall be necessary to trace its influence in the modification of our ordinary diseases and possibly in paving the way for the appearance of some forms not hitherto observed.

Doubtless every physician whom I have the honor of addressing has had abundant opportunity of studying this disease at the bedside and has had occasion to note its exceedingly diverse manifestations, in connection with various forms of affection in different patients.

A sense of profound prostration was the universal complaint, whatever the form of disease. The nervous system seemed to bear the brunt of attack and such was the effect upon the vaso-motor system that the vascular organs, when involved, seemed the more imperiled. By reason of the frequency of severe catarrhal symptoms, it was from the first termed influenza, but while the respiratory organs were most frequently involved and with a larger fatality resulting therefrom, still each of the more vascular structures, as for example, the intestinal mucous membrane, the liver and the spleen, were apt to be affected and with a severity of symptoms not common at other times. Its depressing influences told severely upon our aged people and multitudes of these were borne down from simple physical exhaustion. The loss of muscular power was a common complaint and numbers died from the affection termed heart-failure.

Nervous prostration was a household expression and unhappily it was, by no means, a creature of the imagination. Mental vigor was often times greatly impaired. Men in responsible positions were obliged to lay down their business by reason of the failure of their mental powers, professional men were especially prone to suffer in this respect and while slowly recovering, they were for long periods of time conscious of an inability to grapple with their professional duties as before time.

Mental depressions and despondencies were characteristic of this disease. Insanity was of more frequent occurrence and even suicides became more common. An added intensity seemed to be imparted to every form of disease and directly or indirectly from its influence upon the masses of the people such an increased death rate was achieved as has been equalled in no other epidemic, cholera not excepted. Some specific cause must be responsible for such a wide spread epidemic and for such results. Suspicions point to atmospheric and telluric influences and again to the undiscovered microbe, but as yet the specific cause remains unknown.

Now that this wonderfully pervasive epidemic has disappeared, it concerns us all to know to what extent if any, it shall exert a modifying influence upon our ordinary diseases and whether in its pathway new forms of affections shall arise.

While men are every where studying the former of these questions I will venture to discuss with you the latter, by bringing to your attention a form of continued fever which fell under my observation and which for a period of time was widely prevalent in Chicago. In that city, during the months of

February, March and April, 1891, the epidemic termed la grippe had been remarkably prevalent and with a fatality before or since unparalleled. A comparision of the death rate during these months, with the corresponding months in other years, after making due allowance for the increase in population, will serve my purpose best: In February 1889, the death rate was 15.50 per 1,000; in February 1890, the first year of the epidemic, it was 22.03 per 1,000; in February, 1891, 19.24; in 1892, 21.84. In March, 1889, the rate per 1,000 was 18.22; in March 1890, 12.52; in March 1891, 34.05; in 1892, 20.43. In April 1889, the death rate was 16.72 per 1,000; in April 1890, 17.46; in 1891, 34.50; 1892, 20.19. In May of this year the epidemic had gradually disappeared and the death rate had fallen to less than 19 in 1,000. It was during this month that a form of continued fever became very prevalent in Chicago. It did not seem confined to particular localities, nor classes, nor conditions of people. Almost, if not all our practicing physicians, were called to meet it frequently in private practice and the fever wards of all our hospitals were crowded to their utmost capacity. The cause of this so prevalent disease could be traced to no common source, either of water polution, defective sewerage or any other known causes of contagion. It was thus prevalent during the months of May, June and July of that year and immediately succeeded the three months of severest visitation of la grippe. It had well nigh disappeared in the following August, and thus far there has been *no* reappearance. At the date when this form of fever began to be prevalent I not only met it often in private practice and in consultation with other physicians, but being then on duty in one of our largest city hospitals, my attention was at once called to the crowded condition of our fever wards and to the unusual number of cases which were registered typhoid fever. I soon began to notice a very striking resemblance one with another, in a large number of these cases, so that the history card of the one might be easily duplicated with many an other one with only slight variations. I also began to observe that while in some important features these cases resembled those of typhoid fever, yet in many other respects the symptoms were essentially different. From a much larger number of hospital cases at my command I have selected the history cards and records of fifty well defined cases and after a careful comparison of these am able to give the following as an average portraiture of the disease. I may presume a general description by saying that neither the previous history, nor occupation seemed to throw light upon the exciting cause, for while some had just previously suffered from la grippe, an equal or larger number had not been sick until now.

The prodrome was apparent for from one to five days, with special complaint of extreme muscular soreness and general prostration. The onset of the fever was usually gradual and without chills. It was *continuous* and so uniformly without intermission that by common consent it was everywhere termed typhoid fever. The average duration of the disease or the time that the patient was confined to the bed in the cases here cited was 23¼ days.

Early in the history of each case a high range of temperature was attained and this was maintained in a remarkable manner during the entire course and until convalescence was fairly well established. There was usually only a moderate demand for drinks, food was repulsive and rapid emaciation ensued. In giving reports of *pulse, respiration* and *temperature*, these averages for sake of brevity are taken in periods of five days each. For the first five days the average morning temperature, dating from the term of attack was 101.3, pulse 92, respiration 32. The evening record for the same days, 102.8, pulse 101, respiration 38. During the second period of five days the morning average was 102.1, pulse 113, respiration 39. During the evenings of the same days 103.4, pulse 118, respiration 39.6. During the third period of five days it was difficult to make satisfactory averages, since in some instances the temperature became nearly normal, in others it remained at a high range until convalescence had been well established, but in other instances, by reason of indiscretion in eating or from other causes severe relapses had occurred. It will be observed that the frequency of the pulse was almost never in proportion to the range of temperature and this was also true of respirations. Referring to the conditions of the nervous system I may briefly state the fact that aside from a sense of prostration the nervous symptoms were by no means as severe as is usual in ordinary cases of typhoid fever. The cerebral organs and the nervous centers generally were rarely severely involved. Pain in the head was not a usual matter of complaint. The intellectual faculties were rarely disturbed, there was neither delirium, coma nor subsultus, even in the more severe cases. The secretory action of the skin, mucous membranes, liver and kidneys was notably diminished, and the resumption of their normal functions was unaccompanied with what are termed "critical discharges." It should be said with reference to these cases, that in four instances for the first ten days proper and continuous perspirations rendered them exceptions to the rule. The organs of digestion were matters of continuous observation and study in these cases and in these were found the most marked variations from the symptoms usually observable in typhoid fever.

The mucous membrane of the mouth was intensely *red*, but the secretion of the sublingual glands was such that the mouth was seldom dry and parched and sordes were not found upon the lips and teeth. The tongue had always a bright *red* appearance and in almost every instance even to a marked degree, spear pointed. It had never a dry brown coating nor glazed center, nor fissures, usually rather moist at the edges, the dorsum of the tongue being almost always covered with a clean *white* coating, as white as though it had been smeared heavily with a coat of white paint; and appearing thus for many days.

As a rule there was an entire loss of appetite and emaciation was rapid. The demand for drinks was only moderate, vomiting rarely occurred and pain in the epigastrium was seldom a matter of complaint.

The bowels were not tympanitic nor tender upon pressure; in none of the cases was peritonitis developed. In nearly every case during the entire course of the fever, the bowels remained constipated, usually requiring laxative medicines and enemas to secure their proper action. In only three instances did the alvine evacuations resemble those usually found in typhoid fever. In each of these cases the discharges were carefully examined by competent expert, but in neither of them was the typhoid bacillus discovered. In fact in these fifty cases there was an absence of those symptoms which usually so clearly indicate the presence of abdominal lesions, in the great majority of cases of typhoid fever. The kidneys did not seemed to be involved in this disease. The urine had the appearances which are usually present in continued fever, with occasional sedimentary deposits of uric and phosphatic salts and contained neither albumen, casts, blood, pus corpuscles, nor sugar, and only in a few instances a small amount of bile. There was a noticeable tendency to relapses in the later stages of this disease but in almost every instance where there was a sudden return of high temperature it seemed attributable to an indiscretion in diet. Watchful as the interne and nurses might be, as the appetites of convalescing patients became clamorous, supplies of fruits and of indigestible food were sometimes stealthily obtained and almost always, an added week or more of severe relapses was the penalty which was paid.

I will not presume to consume your valuable time, by any extended narrative of the treatment of these cases. The characteristic feature, more than any other which obtained during nearly the entire course was that of excessive temperatures. In this connection I wish to state that much less satisfaction than we had anticipated was found in the use of either mild or heroic doses of the recently introduced *antipyretics*. Our main reliance for reduction of temperature came to be upon the frequent repetitions of spongings and sheet and towel packings with the liberal use of moderately cold water. Convalescence was more rapid than is usual in typhoid fever, and intercurrent affections of any importance were rarely developed, although a sense of debility remained for long periods of time. Only three of the cases here cited proved fatal, one from pneumonia developed in the third week of the fever, and two from physical exhaustion without any apparent local lesion; neither of the fatal cases seemed to suffer from intestinal lesion. Except in the case of pneumonia the post-mortem examination failed to reveal any special local lesions.

The fact that this fever was so generally prevalent in our city as to be regarded as another epidemic, the fact that it was usually designated as typhoid fever, both in hospital and in private practice,that it so closely followed in the wake of la grippe, and the further facts which I have detailed which seemed to render it *distinct from* typhoid fever, have been my warrant for presenting this subject at this time and for seeking the judgment of the profession as to whether it is to be classed with ordinary continued fever; whether it should be termed typhoid; or whether, and as I believe, it was developed by some unknown cause, perhaps modified by the epidemic of la grippe, presenting, in fact, a *new form of continued fever.* The surrounding conditions of these patients were the same as in other years, yet with an experience, in that hospital, which dates over twenty-five years I had not had a like experience in the observation and study of *fever*. The epidemic, if I may so term it, disappeared almost as promptly as it came and though from that time to this our environments have been the same, yet up to this date there has been no re-appearance of this disease. Without presuming to suggest its *cause* nor to explain its pathology I have ventured to consider it as a distinct form of continued fever, following closely upon the subsidence of *la grippe*.

Dr. Didama, of New York, asked the last speaker whether the color test of the urine had been found in his cases; also, what was the character of the *tongue*; whether these and other characteristic signs of typhoid fever were present or absent in the cases which he had reported.

Dr. Hollister replied that the color test was not made, but that the appearances were similar to those in typhoid fever. The diet he had employed was of milk and pre-digested foods. There was an absence of the eruption and there was marked pallor, except here and there a spotted condition. There was the absence in these selected cases of petechial spots. The speaker had selected fifty cases which had given him symptoms most unlike those of typhoid fever.

The next speaker agreed with Dr. Link, on the neurotic origin of the disease. He had been in the habit of describing la grippe as affecting the nervous system, or the lungs, or the stomach and bowels. In nine cases out of ten it commences with vomiting rather than with diarrhœa, as is usually the case in enteric fever. His treatment of typhoid fever was the old hydrochloric acid treatment; but the grippe, he treated as though it were a neurosis. The difference in the treatment was striking, but the difference in the duration of the disease was also striking. I think, he said, that there is a distinctly neurotic type of the disease, of which we had a great deal in 1889, a pulmonary form, affecting the pneumogastric and the fifth pair of nerves, and a gastro-intestinal form affecting the pneumogastric and vagus.

Dr. Eckles, of Iowa,thought that if Dr. Link's premises had been correct the conclusions would have been correctly drawn, but the error lies in the fact that his premises are wrong. Therefore, his conclusions are also incorrect. He then entered into a discussion of the various kinds of nerves and concluded that the influenza was not likely to attack a nerve consisting of mixed elements like those of the pneumogastric. He thought the symptoms observed in each and every case of influenza physiologically contrary to what we would expect from a "nervous depression" of the pneumogastric nerve.

Dr. Hemingway, of Illinois, could not agree with Dr. Link or the last speaker as to the origin of la grippe. He did not think that the disease was primarily of nervous origin, but that this nervous disturbance was the result of some toxicity. If we had only the nervous origin, how could we account for such influences as the weakening of the heart due to fatty degeneration? The mildest attack may be followed by heart-failure and death. The only reasonable explanation which we have for the phemonena is that the poison, whatever it be, whether a ptomaine or something else, affects the heart in a way to produce fatty degeneration and atrophy.

In regard to the fever spoken of by Dr. Hollister, it seemed to the speaker that we have here the evidence of some ptomaine working. He had observed that in this disease, if he saw the patient early and administered a good dose of calomel he did not as a rule have to see the case a second time. He had seen more cases but once than he had seen five or six times during the epidemic. On the contrary, he had found that where quinine, antipyrine, antifebrine, etc., had been given, he had to see the patient often. The most obstinate and most prolonged cases were those in which acetanilide had been given. Opium does have a curative effect, but the mercurials of some form stimulate the glandular system so as to counteract the production of ptomaines and are far more efficient than any other.

Dr. N. S. Davis, Jr., of Chicago, remarked that the most persistent symptoms in la grippe are the result of toxic agents, and that the disease may be regarded as a neurosis in the majority of cases. Unfortunately in many cases there are symptoms associated with the nasal and other mucous membranes producing the effects that have been referred to as nasal, gastro-intestinal catarrhs, etc. In one epidemic these symptoms prevailed to but slight degree. Another fact which had not been brought out during the discussion, had impressed the speaker as an important peculiarity during the subsequent epidemics, was the contagiousness of the disease. He could not help thinking that it was contagious on account of the great frequency with which it attacked large numbers in the same family, the same factory or house. It occurred much more frequently in those working in doors than it did in those out of doors.

Dr. Herrick, of Cleveland, agreed with the last speaker as to the contagiousness of la grippe. He had observed it in himself and other physicians attending large numbers of those affected with it.

Dr. Kennedy, of New York, asked whether immunity was conferred by one attack.

The question was promptly answered in the negative. The Section then adjourned until 9 o'clock June 8.

SECOND DAY—WEDNESDAY, JUNE 8.—MORNING SESSION.

The first paper of the morning was

POSITIVE AND NEGATIVE RESULTS OF MEDICAL ACTION.

BY BEDFORD BROWN, M.D.,
OF ALEXANDRIA, VA.
EX-PRESIDENT OF THE MEDICAL SOCIETY OF VIRGINIA, MEMBER OF THE MEDICAL EXAMINING BOARD OF VIRGINIA, MEMBER OF SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION, AND OF THE AMERICAN MEDICAL ASSOCIATION.

I have long been impressed with the importance of studying and clearly comprehending in the application of our therapeutic agents, the positive or negative, the certain or uncertain action of our remedies. It may be said now that this is a question duly considered by every intelligent physician. I think that I can demonstrate to you during the course of this paper that this question, even at the hands of intelligent, competent physicians, does not always receive the consideration that it merits.

This question of the positive and negative results of medical action is eminently a practical one. The more closely one may calculate upon and approach certainty of results in medical action the better will be our results in the treatment of disease.

On the contrary, the less attention we pay this important question, the less weight we attach to the character and action of our remedies, the more unfavorable will be the results of our practice.

In summing up an aggregate of the fatal cases in practice we will find that a certain proportion is due to the incompetency of the physician, incorrectness of diagnosis and ignorance of appropriate therapeusis; another proportion from the incurable character of disease, and another still from carelessness of physician and nurse.

But, notwithstanding our diagnosis may be correct, and our therapeusis proper, and we may be entirely competent to treat disease, our success in its treatment may be signally defeated and the results of our medication may be absolutely negative, because of the manner in which our prescriptions are compounded: because of the adulteration in the manufacture of drugs or the substitution of cheap and inferior preparations for those of a standard quality and value.

In these may be found some of the principal causes of the negative results of medical action and of the uncertainties of medicine. A single dose of a worthless, inert, impure, adulterated or insoluble or inferior substituted medicine may cost the patient his life, and the attending physician his reputation. The reputation of the physician is his capital, and that capital is acquired alone by his success in practice. In the acquisition and preservation of the capital it behooves him, like the banker or merchant, to look to the details of practice and to know more than the certain and positive actions of his remedies. If he finds his cases retrograding in progress, there is surely an error somewhere, either in his diagnosis, in the selection of his remedies, in the nursing, or in the character of those remedies, or in the method by which they are prepared. In the administration of therapeutic agents their action must be either positive or negative, and the results either good or bad.

In treating of the subject of negative medication, one of the first and most important questions for consideration is the solubility or insolubility of medicines in the human stomach.

The pill is probably the pharmaceutical preparation in most general use, and of all others is the most liable to be prepared in an insoluble manner. No one can well over-estimate the importance of the simple question of the solubility or insolubility of the *pill* in the practice of medicine, in the results of treating disease. There can be no doubt that a very considerable proportion of the medicines prescribed in the form of the pill are absolutely insoluble in the human stomach. And so far as any remedial action is concerned they as well might have been dispensed with. Of course, such medicines can exert no influence one way or the other, for good or evil, on the progress of the case, whether it terminates fatally or not.

In regard to the use of insoluble pills and capsules in treating disease, my attention was called to this subject some twelve years since in a most positive, but unpleasant manner, and I cannot impress the subject upon the attention of the audience better than by relating a history of the circumstances.

I had under my care a very bright and interesting boy of fourteen, with a most violent form of adynamic malarial fever. I was prescribing twenty grains of quinine per day in divided doses, in what was intended to be fresh pill form.

Instead of fresh pills, the druggist had, as I discovered only too late, been dispensing sugar coated stale pills. The temperature of my patient, most unaccountably to me, notwithstanding the regular administration of this quantity of quinine, was daily increasing. I increased the quantity to thirty grains per day and obtained no better results. On the contrary, the temperature rose to 105° accompanied with delirium, great prostration and dry tongue. In addition I used other antipyretics and frequent cold sponging. Very suddenly the temperature leaped up to 106°, and as the child was then suffering much from diarrhœa I asked to see the alvine discharge. In the discharge examined I discovered two or three small white balls. They were washed and examined, and found to be sugar coated quinine pills perfectly undissolved. The mother informed me that she had observed those lumps, as she termed them, in all the discharges when examined, but supposed they were peculiar to the disease. There was an explanation of my patient's steady and downward progress. Probably not a pill had been dissolved in the stomach and not a grain of quinine had been absorbed into the system. My patient was lost, not from incorrect diagnosis, not from the prescription of improper medicine, not from careless or ignorant nursing, but from the use of an insoluble pill. Subsequently to this I was attending an interesting little girl of twelve, with malarial fever. I observed at my daily visits that the condition of my patient was growing worse, notwithstanding she was then taking twenty grains of quinine per day in pill form. I had ordered from the druggist some freshly prepared quinine pills. The temperature of my patient now rose to 104½° on the border lines of danger. At this stage, as the child was suffering from diarrhœa, I inspected the discharge and found two undissolved pills. On inquiry the mother informed me that she had observed them in almost every discharge, but supposed them to be peculiar to the disease. I called on the druggist in person and found that he had been dispensing throughout the case sugar coated pills. I then ordered fresh pills to be made, but unfortunately they were compounded with gum arabic, and the next day they were also found in the alvine discharges in an undissolved condition.

I now prescribed twenty grains of quinine in solution per day, and in twenty-four hours the condition of my patient was better, and her subsequent progress was uninterrupted. The only excipient I have found that would render a pill perfectly soluble in all grave forms of fever, is pure *honey*. Gum arabic, gum tragacanth, even sugar will render a pill insoluble in these conditions.

In the grave and malignant forms of fever the functions of digestion are reduced to a minimum, and the capacity to dissolve either food or medicine is diminished to the lowest degree.

To a digestion impaired to this degree we must be careful to adapt the solubility of our medicine. To patients with these grave forms of disease, I order only pills freshly prepared with simple honey or glycerine. I have inspected the discharges of patients repeatedly when taking pills prepared in this manner, and never found one undissolved.

Indeed, in the grave types of fever of all descriptions where certain organic changes of the mucous membrane of the alimentary canal have taken place, rendering them incapable of performing their proper functions, and the great sympathetic system is partially paralyzed for the time, they are not in a condition to dissolve a pill in any form, and then medicine in solution can be given, and I prefer quinine in a solution of muriatic acid. In this condition of affairs to give an insoluble pill is to permit your patient to die. When the temperature of our patient reaches 104°, his condition is growing serious and he needs medicine in a form that will act promptly and speedily. When it rises to 105° he is on the border lines of danger, and when 106° is attained I trust not medicine in pill form, as a stomach at a temperature of 106° will hardly dissolve a pill twelve hours old sufficiently rapid to meet so grave an emergency. Then the antipyretics must be given either in solution or powder. I feel satisfied from my own personal experience that a certain proportion of human lives have been sacrificed from neglect of this principal alone.

In these alarming conditions we cannot trust the lives of our patients to the uncertain chances of the solubility of a stale sugar or gelatine coated pill or capsule.

I have on repeated occasions when the temperature had reached dangerous limits, and the alimentary canal was incapable of dissolving a pill, and rejected a solution of quinine, given, by enema in mucilage, that article in thirty grain doses with the happiest effect.

During an epidemic of grave malarial fever I had a case of specially malignant type with a temperature of 106° that had been taking twenty-five or thirty grains of quinine without effect in pill form. I ordered an enema containing forty grains of quinine in a gill of milk and thirty drops of tincture of opium. The temperature fell to 103° in twelve hours, and then in twelve hours more to 101° on repetition of the enema. These details would seem to be of small importance, but in the treatment of disease they are of practical worth.

There is a question that arises now whether the cool bath in very high temperature does not aid the digestive organs in dissolving both medicine and food. I believe that it does promote that object. The hurry and bustle of the age, the desire to economize time and labor, and the thirst for gain are responsible for much of the delinquencies of both manufacturers and druggists. For the past twenty years the country has been flooded with sugar and gelatine coated pills and capsules that are kept and dispensed in a stale and too often insoluble condition to fill prescriptions for the very gravest as well as the mildest cases. It behooves us to look well to the solubility of our remedies given in all grave forms of disease as typhoid or malarial fever, pneumonia, dysentery, cholera morbus, diarrhœa and in all other cases where the vital condition is reduced to a low standard, or we may surely expect to obtain negative medication and unfortunate results. For the purpose of illustrating more clearly the important principle involved in this question, I think it proper to recur again to the relative capacity of the digestive organs in disease to dissolve solid substances. For instance, I have known a hard stale pill to remain in the stomach for twenty-four hours and then be rejected in an undissolved state. I have known a portion of crust of bread to remain fifteen hours and then to be rejected without having undergone digestion. I have known in the case of a child a portion of green apple to remain twenty hours undigested after being swallowed, and then rejected by an emetic. I have seen a hard portion of fruit cake to remain in the stomach undigested for nearly twenty hours, and then came convulsions that were relieved by its final rejection. Even in transient conditions of indigestion the capacity to dissolve solid substances is greatly reduced. To recur again to the question of the solubility of the pill, while it is true that a perfectly healthy stomach and vigorous digestion might dissolve even the stalest sugar or gelatine coated pill, in a large proportion of cases they would pass through an entire alimentary canal in a state of disease, with its vital standard reduced, and our object would be defeated and the result of our medication would be *nil*. In the prescription and administration of medicine and food in grave forms of disease how few of us take into consideration the lowered standard or capacity of the stomach to dissolve ingesta. But there are various other agencies of equal importance by which we can derive negative results in the application of our remedies.

The criminal adulteration of drugs by dishonest manufacturers is another means not less important and more reprehensible. For this our profession is, in part, to blame, as they too often encourage obscure, unscientific, dishonest manufacturers, simply because their productions are cheaper. The laity is always captivated by cheap drugs. To them the opportunity to purchase cheap medicine is that much saved. They are prone to regard cheap medicine in the light of a bargain as they would cheap groceries or cheap dry goods. This crime of adulteration of drugs might be in a measure, if not wholly, corrected if medical men and patients would patronize alone honest, skilled manufacturers and druggists.

There is a popular delusion that cheap druggists and cheap drugs, like cheap groceries and cheap clothing, are profitable things to patronize. The profession should in every manner possible endeavor to correct this delusion. This is the cause of an infinite amount of injury in defeating positive and certain medication.

Pure drugs always command a standard value and no pure drug can be sold for less than the standard price without loss. Hence, the very fact that drugs are sold cheap is an evidence of their impurity. The practicing physician should condemn and seek to avoid cheap druggists and cheap drugs as dangerous things to the success of his practice.

This crime of adulterating medicine and the dispensing of cheap, inferior and inefficient medicine has lost many patients their lives, and physicians their reputations.

To the honest, skilful manufacturer and druggist, both the profession and patients owe a great and lasting debt of gratitude. It is a genuine true pleasure and satisfaction to know that our prescriptions fall into the hands of such men.

There are pharmaceutical manufacturers whose productions never fail to come up to the correct standard, and druggists who never fail to compound their preparations correctly. It is only too true that there are others that cannot be depended upon. There should ever be existing a close, mutual relationship and confidence between the physician and druggist. It is of importance and advantage to both, and equally to the interests of both professions. As a means also of promoting negative medication, I desire to allude here to another criminal act on the part of dishonest druggists, the substitution of inferior and cheaper articles in filling prescriptions for those of purity and standard value. No one but a dishonest druggist could do this. And the man who would be guilty of committing this act would not hesitate to commit any other dishonest deed. He could not be trusted in anything. Yet we know that it is a not uncommon vice that our profession has to contend with. And it has been, and is being the means of defeating our success in our daily practice, and is an obstacle exceedingly difficult to deal with. The substitutor of drugs does not make a boast of dispensing cheap medicine, but sells for full price, and makes full profits, and until he renders himself liable to suspicion, makes his rascally business profitable at the expense of human life and professional reputation. When we order such elegant and pure drugs as Squibbs' chloroform, ether, ergot, we know what we are using. We expect certain positive effects and results. But when the dishonest druggist substitutes an inferior for a pure article, both the patient and physician are at his mercy. But, nevertheless, he goes on reaping enormous profits from his nefarious practice.

The great majority of druggists are honorable, high-minded men, competent in their profession, who would scorn to commit a dishonest act. But it is only too true that there is another class who are not above the grade of disreputable tricksters in the commonest and lowest trades of life. In this way the druggist who is guilty of substituting becomes an efficient agent for the promotion of negative medication.

In the past fifteen or twenty years there has sprung up all over the country, from hundreds of manufacturers, vaunted remedies under the title of "uterine tonics," for the cure of organic uterine disease. Under different appellations these preparations are sold and swallowed by the hundreds of gallons by females who are, or imagine themselves suffering from uterine disease. And these preparations are encouraged and prescribed by practicing physicians. I believe this to be one of the patent examples of negative medication.

I do not believe that there is on record a single instance of the cure of organic uterine disease by these remedies. Ergot has power to control uterine hæmorrhage and induce uterine contraction. Beyond these its therapeutic powers does not extend. Yet year after year the physician continues to lavishly prescribe these proprietary preparations when he must know that his results are negative. A remedy of this kind only has to be put upon the market and vaunted as a specific to meet with ready encouragement. The eagerness with which these remedies are caught up and used indicates the great difficulty of treating this class of affections and the disposition of our profession to catch at new and unknown remedies.

There is another subject of importance which is well calculated to defeat the positive action of our remedies, and I have no doubt has often been the means of obstructing our successful practice. I allude here to the common custom by druggists of the present time to facilitate business, of preparing decoctions and infusions of vegetable remedies from extracts often stale, or worthless. Many of our most important and efficient remedies are administered in this form. For instance the infusions of digitalis and ergot are remedies applicable to the treatment of some of the most dangerous forms of disease. Yet how common has it been in my own experience for an infusion or decoction of these drugs to be prepared from a worthless extract that fails to exert any positive action whatever. This is a question of such vital importance, the profession cannot afford to ignore it. I have on numerous occasions prescribed an infusion of digitalis in organic heart affection or pneumonitis and obtained not the least positive effect, and on inquiry found that the druggist occupied just ten minutes in making the preparation, when it should require one and a half hours to prepare an infusion or decoction from the leaf of the plant.

I then ordered an infusion from another druggist to be prepared in the proper manner, and found it all that could be desired. In the case of a female patient, long the subject of cardiac valvular disease, when extensive dropsical symptoms had supervened, I prescribed the infusion, or rather decoction of digitalis. The patient stated that digitalis would not benefit her in any form as she had taken it previously both in tincture and decoction without benefit. I then called on a skilled and reliable druggist and directed him to prepare for her a decoction from the digitalis leaf and consume an hour and a half in the preparation. The effects of this preparation after being administered twenty-four hours were of a most positive character, both on the heart and kidneys, and were such as to astonish my patient. That was twelve months ago, and there has been no return of dropsical symptoms since. The history of this case affords a very satisfactory example of the negative and positive action from the same remedy prepared in a different manner.

Thus, by different methods of preparing the same remedy we may obtain the most opposite results. The patient alluded to above, I discovered on investigation had formerly used tinctures and infusions prepared from fluid extracts only, which the druggist had made hastily in five or ten minutes, and was ignorant of the fact that he had furnished a worthless preparation and was impressed with the belief that he had prepared an elegant article with neatness and dispatch.

Probably at the present time the vegetable extracts enter more largely into the formation of our prescriptions than any single pharmaceutical preparation. And it is equally probable that they of all others are less reliable and more subject to adulteration and are made with less care and scientific thoroughness. It is also very certain that a very large proportion of these are utterly worthless and inert, and in their application we are using remedies that exert no influence one way or the other on the progress of disease. How this great and serious difficulty is to be corrected is a question in which all are interested. I am impressed with the conviction that it is not very difficult to do this and it can only be accomplished by the members of our profession giving their patronage to druggists and manufacturers of known character and established reputation.

There are firms having celebrated establishments for the manufacture of drugs of long standing and whose unvarying reputation for honesty and capability have established universal confidence and whose character is dearer to them than gold. These names, which it would be invidious to mention, we can trust, for they never deceive us.

For some years the fluid extracts as ordinarily prepared I have found to give so little satisfaction I now almost invariably prescribe a decoction or infusion prepared alone from the vegetable remedy in its native state, and I rarely fail to obtain positive effects. I often obtain absolutely negative results from the fluid extracts of ergot, uva ursi, digitalis and other vegetable remedies and get as certainly positive effects from the decoctions of remedies prepared from the article in its native state.

It is said that Lawson Tait found the extract of ergot so very unreliable that he now prepares a decoction from the grain at the time when needed for immediate use.

In a practice extending over many years I have seen so much of the evil effects of what I have here termed *negative medication*, or in other words, the absolutely negative results in the use of medicine arising from the various causes mentioned, I have come to regard it as necessary in any case undergoing treatment when the progress is either stationary or retrograding to consider the simple question whether the action of our remedies is positive or negative, certain or uncertain. Or on the other hand, whether the defect lies in our diagnosis, the inappropriateness of our therapeusis, or in quality, or method of compounding our remedies. Hence, in all cases where serious difficulties arise and the progress of the case is unfavorable, I have come to consider the questions of the character of the compounding druggist; the quality of the medicine prescribed, its solubility or insolubility and the possibility of adulteration or substitution.

Dr. Didama, of New York, said: I think we will all agree with the essayist that many pills do not give us satisfaction. He did not refer to the tablets which we have in soluble form. Most of these are readily soluble. Sugar coated and gelatine coated morphine pills will rarely dissolve. The administration of medicine in capsules is used a great deal; and some of us in the east are in the habit of administering medicines in wafers which are swallowed very easily by persons who cannot swallow a pill. We cannot control the druggist and we cannot always send our patients to the one of our choice, as patients have also their preferences. They take them often to the cheap pharmacist. The speaker favored the dispensing of drugs by the physician.

Dr. Wilson, of Kansas City, remarked that for twelve years he had been a druggist and during that time he had learned something. Since becoming a physician he had dispensed his own drugs, except for a short time. Since doing so he had largely increased his business. The pills of one of the large advertising firms in the United States will invariably pass through the entire alimentary canal without dissolving. The value of our work in the future, in dollars and cents, will lie in our dispensing our own remedies.

Dr. Herrick, of Cleveland, heartily agreed with the remarks that had been made. We are all witnesses, he said, of what Dr. Brown had said. He believed that the dispensing of our own drugs is in the way of progress. This is the custom in England and Europe. It can be done with little expense and trouble. It will greatly improve the quality and the taste of our medicines as well.

The next paper read was entitled

A CASE OF AMŒBIC DYSENTERY.

BY E. P. GERRY, M.D.,

OF JAMAICA PLAINS, MASS.

In calling attention to the amœba dysentariæ, the nomenclature of Councilman and Lafleur has been followed, instead of Lösch, who in 1873 first described the organism under the name of amœba coli. As Councilman and Lafleur say in their admirable work on amœbic dysentery, the name amœba coli is not distinctive, for it is very probable that there may be a number of species of amœbæ which, under certain conditions, infest the colon.

They quote Cunningham, of India, as having found them not only in human fæces, in health and disease, but also in the fæces of some of the domestic animals It therefore seems proper that the more distinctive name is the one by which the organism should be known. Lambl in 1859 discovered certain organisms belonging among the protozoa in the intestinal contents. They produced a dysentery which baffled most observers as to its significance, even in countries where climatic conditions oftenest produced it.

Although ably studied and described by Kartulis in Egypt, as early as 1885, it did not attract that attention which such work deserves. Everywhere the mind of the investigator has been largely filled with such important subjects as bacteriology, etc.

In this country the name of tropical abscess, or dysentery, suggested at such a distance from that latitude, that the likelihood of its occurring among us of the temperate zone was hardly thought of, until Osler, in 1890, first found and described it, and made it evident that it might be brought to, or even originate in a northern country. Since then cases have been found of which the one to be related is a type, which occur unexpectedly, probably from the same but restricted causes which produced the condition in warmer climates.

That they have been unrecognized is undoubtedly true; that this disease occurred in the United States before it was recognized is also true, for Councilman and Lafleur, after a very careful study of the specimens of dysentery in the Army Medical Museum, found undoubted traces of amœbic dysentery. The specimens came mostly from soldiers who died of dysentery during the late war, remaining undescribed until Osler's discovery in 1890 led his colleagues to give special study to all quarters where the disease was liable to be found. In view of these facts it i fair to suppose that the profession in America knew very little, if anything, of this peculiar form of dysentery until Councilman and Lafleur presented a complete history of it.

That such a disease with such a cause existed was a revelation to the reader. The object of the paper is to call special attention to it, so that some professional brother may be *able to correctly diagnose* such a case and properly treat it. That the profession at large is as well informed as it should be on this topic can be doubted. There is no question but that the members of such a National body as the American Medical Association should be urged to study the subject thoroughly, for the authorities say that it is found in most parts of the United States.

More than in most diseases does correct diagnosis make successful treatment possible.

That amœbic dysentery is a form of dysentery which etiologically, clinically and anatomically, should be regarded as a distinct disease, it seems as if no one reading the experiments of Kartulis can doubt. Some will ask, Has he followed Koch's canons; first, by proving that the amœbæ existed in enough cases to make it reasonably certain that they will not be eliminated as the cause of the disease; second, has he been able to cultivate them outside of the body (under artificial conditions); third, when cultivated, has he been able to produce characteristic symptoms when reintroduced into the bodies of animals. Kartulis says he has.

He injected into the rectums of cats the cultures obtained, and found as a result the colon swollen and lax, with occasional small erosions, but no regular ulcers. Hlava, of Prague, supports him in his position, for he injected the stools containing amœbæ into the rectums of dogs and cats, with positive results in two dogs out of seventeen and four cats out of six. Baumgarten, however, although not contradicting Kartulis' positive statements, thinks it more probable that the pyogenic microörganisms play an important part along with the amœbæ in the production of tropical abscess.

That it is difficult to tell absolutely just what they will do, and where they will be found is likewise difficult, for they are reported as having been found in the bladder and vagina of a tuberculous case. That they produce abscess of the liver has long been known, and that they work their way into the lung is now recognized. That the disease has so long been unrecognized and unstudied in this country, and that the principal literature on this subject has come until recently from Kartulis in Egypt, and perhaps Cunningham in India, has been due to the fact that cli*matic conditions in those countries* produced more of it than among us. It is only, as it were, accidentally, that Osler had a case come to him.

The case to be reported is as follows:

Miss F., aged 25, family history excellent, unusually strong and well until August, 1890. She had, however, lost color for about a year previously, supposed to be due to taking care of her mother, who died with bronchial trouble.

She was somewhat debilitated at that time, but regained her flesh and strength some months later, but not her color. In August, 1890, she noticed a single solid, whitish discharge from rectum, like a white clot. Her bowels then became constipated, and after a month, occasional small discharges of *bloody mucus* were *noticed*, containing numerous white specks and streaks. These persisted despite the various remedies that were used. *She had three or four* discharges daily, mixed with more or less semi-solid or liquid fæces of a brown color. At one time after treatment began, in September, 1890, she was very constipated, not having an operation for eleven days. After that time, she *noticed that the* bowels did not seem to act naturally, whether constipated or loose. At intervals the quantity and number of blood-stained stools were lessened under treatment, although they never became quite normal. They were *perceptibly* fewer during the early summer months of 1891, especially so while at the sea-shore.

The last week of September, for a week or ten days the stools became more bloody, and she had as many as a dozen or fifteen daily for a few days. During September and October the stools became more offensive than usual, though they were noticeably so during her illness. This attack came on while she was in extra strength and weight, the result of the sea-shore vacation. *In fact, she only became* emaciated when the severity of the symptoms increased. No important loss of strength and weight had been noticed during the year she had been passing blood-stained fæces. *The evacuations had been painless*, and unaffected by food or drink. In fact, *pain had not been a symptom*, either in the epigastrium or other part of abdomen. There had been neither nausea, tenesmus or jaundice. During October tenderness was noticed in right iliac fossa, but there was no dis*tension until* October 23. On that day the bowels began to be somewhat distended and tympanitic, and the tenderness extended upward, nearer the liver, becoming more severe and producing a feeling as of a bunch under fingers.

This was the first time that there had been any swelling. The temperature was 101°, pulse 120. There was loss of appetite, drowsiness and some slight sweating. Fever was a new feature, but the pulse had run from 100 to 120 since September. Micturition became more frequent. Examination showed no uterine trouble. As a rule she slept well during her illness.

After she was confined to her bed, she was in the habit of lying on her back with knees drawn up a considerable part of the time, as a lateral position produced an inclination to evacuate the bowels. Diagnosis of dysentery from ulceration was early made, and injections of liquor bismuth, etc., were given, and bismuth by mouth, during the year she was under treatment before the amœbæ were discovered.

The marked intermissions in symptoms raised the hope that treatment had been successful. The violent attack in September again called attention to the dysentery, and diet and treatment were directed towards supplying the patient with food that would not irritate the bowels and with medicine that would stop the bloody stools. Peptonized milk was given as the only food for a week or two, of which she took about two quarts daily, then Valentine's meat-juice and egg-nogg were added. Opium and camphor pills were given after a short course of teaspoonful doses of castor oil. The oil appeared to relieve, but was abandoned because it was feared that instead of relieving the dysentery, it might be continuing it. As the bloody discharge continued, gallic acid was given, with the effect of diminishing the blood in the discharges. The rectal treatment consisted of injections of sulphate of zinc.

The febrile attack with tympanites, etc., October 23, with the extension of tenderness and the appearance of a hard place under the liver, led to a consultation with Dr. R. H. Fitz, of the Harvard Medical School, who made a diagnosis of "chronic, ulcerative colitis, acute paracolitis and probably amœbæ dysenteriæ," which he verified microscopically. *In his report of the case* he says: "The abdomen was slightly and symmetrically distended, tympanitic everywhere, except over a space as large as *the palm of the hand*, at the right of the navel, between the costal cartilages and the anterior superior iliac spine, extending *nearly to the median line*. The dull region was tense and tender, resistance gradually lessening toward the edge; there was neither elasticity nor a sense of fluctuation. There was slight tenderness in the hypogastrium just above the symphysis. The liver dulness was slightly increased; there was no tenderness in the hepatic region; the splenic dulness was somewhat increased.

"The rectal examination was negative. Two stools, seen at this time, were homogeneous, soft, pap-like in consistency; they were of a brown color, mixed with red from the presence of blood, and in one were clumps of reddish mucus, translucent, *like sago grains*.

"The fæces were examined microscopically, at intervals, during a period of several *days, and amœbæ* were always found. They appeared as round or slightly oval bodies, varying somewhat in size, but in general, with a diameter six or seven times that of a leucocyte. The periphery often appeared like a homogeneous, hyaline membrane, while the body of the amœbæ was composed of coarse, gray granules.

Within the body a nucleus was often to be seen, also vacuoles, and occasionally, one or more red blood corpuscles.

"The fæces were brought from a distance of several miles during cold weather, and the amœbæ were always motionless, even on the hot stage. In only one instance were pseudopods present, but they remained quiescent during a period of several minutes. The diagnosis of a paracolitis in this case was suggested by the acute, febrile attack connected with the limitation of the sudden and sensitive induration to the course of the ascending colon, the absence of a sharply defined edge, and the failure to appreciate the fluctuation or elasticity which usually accompany an encysted fluid near the abdominal wall."

Just here special attention is called to the problem presented to Dr. Fitz. The case was classified as one of dysentery, although there had been neither painful stools nor bowels during most of the sickness. An ulcerative cæcitis or colitis of malignant or tubercular character was suggested by both positive and negative symptoms. Suddenly a tense, tender, non-elastic, non-fluctuating bunch was found under the liver, accompanied by febrile symptoms. An abscess appeared imminent. What did it mean and what must be done? Dr. Maurice H. Richardson, Massachusetts General Hospital, was summoned to determine if anything surgical should be done. After two visits he was not positive. and asked that Dr. Fitz see the patient. In view of what the case proved to be, one can imagine what a blunder surgical interference would have been, and the brilliancy of the diagnosis which perhaps prevented even an exploratory incision.

High rectal enemata of dilute solutions of quinine (1 to 5,000) were recommended. These injections were given cold, morning and evening during November and December; a soft rubber rectal tube was used, which was inserted as far as possible, patient lying on her right side, hips elevated, gentle friction being employed along the colon. At first no change or improvement was noted, but after a time it was evident that the dysentery was better. The passages were less frequent, the necrosed tissue was less abundant and the amœbæ began to disappear from the stools, frequent microscopical examinations being made. Notwithstanding these improvements the marked anæmia persisted. Œdema appeared in one ankle, then after a time in the other.

Nausea and occasional vomiting of food and large quantities of mucus, with loss of appetite, probably from irritation in the colon, showed that the stomach was feeling the strain. Progressive loss of strength was apparent, and the outlook was discouraging. This was made more so by the exacerbations, which would prostrate her just when she seemed to be improving. It was feared this was due not only to the loss of blood she had sustained but, as was suggested, to the fact that the amœbæ were destroying the red blood corpuscles. Still she did gain, despite the weakness which was always present. She began to sit up, and the day before Christmas wrote a letter. Christmas day and the day following she did not feel very well, although there was nothing apparent more than there had been a number of times before. December 27 pneumonia set in, and she died early in the morning of December 28, during the week when la grippe invaded Boston, and to which she fell an easy victim. During the last month of her life, her abdomen continued tympanitic, but the bunch under her liver became smaller and tenderness almost disappeared.

The autopsy, as reported by Dr. Fitz, showed that for some 7 inches below the cæcum, the inner surface of the intestine was trabeculated and undermined, a lace-like covering and granular projections being present. The rest of the lining of the colon showed an irregular, lobulated thickening The muscular coat was thickened and the canal diminished. The entire inner surface was of a dirty greenish-gray color. About the middle of the ascending colon, the mesocolon showed a localized dilatation and injection of the vessels. On microscopical examination of secretions from the ulcerated intestine no amœbæ were found.

Authorities state that the amœbæ probably reach the large intestine in the food and drink; that they exert no action on stomach or small intestines, but only when they reach the large intestines, where they find favorable conditions, namely: an alkaline material. If water contaminated by organic material is a source of this disease, how important a subject the purity of our water supply is. The clinical history of such a case is characterized by a variable, perhaps uncertain opening, marked intermissions and exacerbations of bloody stools, having in them what one learns to recognize as necrotic tissue of a grayish-brown color; Councilman reports one measuring 11 centimeters. Tenesmus is generally not a prominent feature. Anæmia is usually well marked.

The pronounced tendency to chronicity adds discouragements to the case. The diagnosis being made positive by the presence of the amœbæ in the stools, certain physical characters different from those seen in the stools of other forms of dysentery present themselves. Councilman says they are rather more numerous in the small gelatinous masses found in the fæces. Their number is generally proportionate to the severity of the lesions. The report referred to cites a fatal case, however, in which no amœbæ were found until after death, although there were extensive sloughs from cæcum to anus. Prognosis depends upon the quickness with which a correct diagnosis is made and the thoroughness of the treatment. Diagnosis having been established, the organisms must be destroyed. An important clinical fact is the undoubted curative value of simple cold water injections containing either quinine or boric acid. Eichberg, of Cincinnati, suggests that as warmth favors the multiplication of organisms of a low order, cold either destroys their vitality entirely, or suspends it sufficiently to enable the bowels to throw off the organisms.

The paper offered is principally a clinical picture of what was to the reader a very interesting and little known form of disease. It is presented by a general practitioner to general practitioners.

It is eminently proper to acknowledge indebtedness to the thorough work done at the Johns Hopkins Hospital, for much valuable information and literature regarding the subject.

Dr. Herrick remarked that it would be interesting to know how the amœba gets into the alimentary canal. Other elements are involved. Is it not true that the circulation of the abdominal organs is largely controlled by the liver. This organ, he thought, had a great deal to do with the disease. He attributed it to the use of too much amylaceous matter.

Dr. Didama thought the remarks of the last speaker not very pertinent to the subject under consideration, and requested that in the future the remarks be confined to the subject under consideration by the essayist.

Dr. Musser, of Philadelphia, thought we should be thankful to the essayist for his paper, because in it we have without doubt a positive addition to our knowledge regarding the pathology and physiology of occurrences in the alimentary tract. He had been much interested by the narration by the essayist of a case of this kind occurring in the North. This form of dysentery was formerly supposed to be of tropical origin only. But since the first observation of Dr. Councilman, who read a paper before the American Association of Physicians, reporting a case which occurred in Canada, the possibility of its occurrence in northern regions must be conceded. It is doubtless more common than is supposed. The speaker then reported a case which favored the view that the disease is of tropical origin, or at least more likely to occur in persons who have resided in the tropics. The case was one of a woman past middle life who was born in Cuba, but a resident of this country for fifteen years. She had never had any bowel trouble except in early life. She had an attack of acute dysentery, as we are accustomed to recognize it in this climate, all the manifestations differing in symptomatology in a large measure from those of ordinary dysentery. There was fever, pain and the characteristic dysenteric stools. With Dr. Guiteras, the stools were examined by the speaker. They were able to find in the masses to which attention has been called by Osler and Councilman, the living organisms, moving with all the characteristics of a living amœba. The clinical history of the case was otherwise that of an ordinary case of dysentery.

He did not resort in the treatment to the injection of quinine, which is probably the best remedy, particularly in the chronic form of the disease. He had referred to the case, he said, because in the first place it was another case occurring in the North, and because it presented the ordinary symptoms of dysentery, and finally because [illegible] lieved by saline cathartics and other [illegible] resorted to.

The next paper was entitled:

RETAINED FECES.

BY W. S. CHRISTOPHER, M.D.,

PROFESSOR OF DISEASES OF CHILDREN, CHICAGO POLICLINIC.

The French, perhaps, more than any other people, have studied the effects of retained feces. Stercoræmia is a common word in their writings. Bouchardat particularly has investigated this subject, and has studied its relations to impairment of hepatic functions. It is not, however, my purpose to review the literature, but to call attention briefly to a few features of the subject, with a view to opening a discussion.

From experience gained by the frequent use of lavage of the bowels, I am almost ready to believe that a greater or less retention of old feces is a normal condition. At least I have frequently washed out from bowels that were apparently normal, old scybalous masses, which could hardly be charged with either local or remote effects.

Feces stranded in the cæcum may do no harm, but they are a constant menace. Sooner or later they may set up typhlitis, a disease which I believe exists as an entity notwithstanding recent pathological reports and the somewhat strongly expressed views of some modern abdominal surgeons. Typhlitis once inaugurated, a long series of disasters may follow, to which the somewhat indefinite name, right iliac disease, might with propriety be given. I can heartily agree with Jules Simon that the great danger of typhlitis is appendicitis, but cannot agree with the view which is so commonly held at present, that the initial factor in right iliac disease is always appendicitis. The mechanism by which appendicitis and the subsequent peritonitis are produced is not clear, but some recent observations by Adenot, of Lyons, would indicate that the bacterium coli commune is to blame. This ordinarily innocent inhabitant of the bowel, seems to acquire virulence in the presence of catarrhal conditions of the bowel, and then becomes capable of giving rise to appendicular and peritonitic disease, and even the so-called perityphlitic abscess.

Impaction of feces so extensive as to produce actual obstruction of the bowel is certainly uncommon, but localized impactions giving rise to localized peritonitis, and even peri-colonic abscess, are not rare. I have recently had a patient with serious stomach disorder secondary to an obstructive heart lesion, who developed in the region of the spleen, a most intense localized peritonitis. Lavage of the bowel was rewarded with the removal of a large mass of scybalous feces, and great relief to the localized tenderness. Some relief was also afforded to the severe vomiting present.

But the local systoms resulting from retained feces are not the most interesting or the most important.

Retained feces usually putrefy and give constantly to the blood stream a supply of poisons of the most varied type. When this supply is small, the liver changes the poisons into innocuous substances and no harm results. But when the supply is large, or the liver incompetent to perform its function in this direction, these noxious substances gain entrance to the general circulation and produce the most varied symptoms. We have then the stercoræmia of the French.

Headache is a common symptom resulting from this condition, and the old fashioned and much maligned biliousness is another. Fever often occurs, and to this fact is due the wide spread belief among the laity that castor oil is good for fever. Skin eruptions are frequent, and are only permanently cured when the source of the poison producing them, is cut off. Sir Andrew Clark has expressed his belief that the best remedy for anæmia is a laxative. This bold statement, often true, serves to call attention to the undoubted fact that stercoræmia is a frequent cause of anæmia. A clinical picture which I have often seen, is the following: First, constipation, then putrefaction of the retained feces, then stercoræmia, then anæmia, then as a result of the impoverished blood, incomplete nourishment of the various organs of the body, then defective secretion, particularly defective gastric secretion, then dyspepsia, then improper digestion and assimilation of food, then increased anæmia. Thus a vicious circle is formed, which tends constantly to increase the pathological conditions present. Certainly iron can be of but little service under such circumstances. To effect a cure the retained feces must be removed, before attention need be directed toward the other conditions.

The following case, when first seen was suspected by my assistant to be one of tubercular meningitis:

Mary S., age 7 months, had scarlatina four weeks ago, and had diarrhœa while the rash was on her. Now she does not take the breast, and is feverish at times. Is sleepless, and has been given soothing syrup. Rectal temperature 103. Pupils react very slightly and are even. Abdomen somewhat retracted, bowels constipated. Tâche rouge appears and disappears slowly. There are some rose colored spots on the abdomen which do not react like typhoid spots. Urine dark and of bad odor. There is a whitish film on the alveolar process. Expression is stupid, has a whining cry, and keeps her finger in her mouth. Believing that the case was only one of constipation, I gave the baby three one-grain doses of calomel, with the result of removing from the bowel a large mass of putrid feces. This was accompanied with a great amelioration of the symptoms, and a few days more attention to the bowels in the same direction, completely cured the child.

It would be tiresome to attempt to enumerate all the symptoms which can be produced by retained feces. It is probable however, that any symptom which can have its origin in an action of the central nervous system can be initiated by the poisons produced by retained feces.

I shall content myself with relating two cases which are of more than ordinary interest.

Mrs. L., age 60, is a very obese woman, weighing ordinarily 210 pounds. When I first saw her last October, she had been confined to her bed for two months. Partly owing to her great weight, and partly apparently from some degree of paresis she was quite unable to turn herself in bed. During the preceding two months she had had occasional irregular febrile periods. At the time I first saw her she was vomiting persistently, being utterly unable to retain the milk and lime water which was being fed to her. In addition there was complete incontinence of urine and feces, which passed from her without her knowledge. Her pulse was weak and her general condition bad. The outlook was very gloomy. The diagnosis lay between structural disease of the spinal cord and constipation. For the latter diagnosis, there was no positive evidence whatever. Her obesity rendered it impossible to determine the condition of the colon. The diagnosis of possible constipation was made, however, because all the symptoms present could be explained by such a condition and any other diagnosis meant abandonment of the patient to her fate. She was given copious enemas of water, which brought away large quantities of hard, lumpy, feces, covered with mucus and some pus, and having a very putrid odor. These lumps continued to come away with the enemas for two weeks. Improvement quickly set in and in about a month she was well. Last week I saw the old lady, perfectly well, and unusually active for one of her age and weight.

The next case is one which occurred in the practice of Dr. Harold Moyer of Chicago. It is the most remarkable instance of the evil results which can follow from retention of feces, which has ever come to my notice. I quote in full Dr. Moyer's report of the case, as published in *The Alienist and Neurologist* for January, 1890.

"July 17, 1887, I was summoned to an adjoining city to see Mrs. G., in consultation. The attending physician furnished me with the following account: Father of patient living and well; mother died of cancer of the uterus. No trace of insanity in the family, or neurotic heredity of any kind. Her health previous to the present difficulty had been fair, an occasional cough, with inflammation of the pharynx, being her only illness. Menstruation appeared at fourteen, and was always normally performed. Married at twenty-three, and at twenty-five, had a premature labor, this accident not being followed by any disturbance of the general health. Present illness began about eight months ago, and was marked by an increasing general debility, loss of appetite, decrease in weight, and obstinate constipation. The symptoms did not point to a change in any particular organ. Six months later, had sudden attacks of fainting. occurring at irregular intervals. These attacks would begin with pain in the left hypochondrium and a sense of suffocation. Within the last six months, tenderness on pressure has appeared in this region, and the attacks have become more frequent, and are accompanied by vomiting. During this time she had no febrile reaction, but was nervous, excitable and affected with morbid fears. This was substantially her condition until three months before she came under my observation, when she began to show positive signs of insanity, was restless, sleepless and incoherent, with confusional hallucinations and non-systematic delusions of a depressed and melancholy character.

Examination of the patient shows the muscles and fatty tissues wasted to the last degree. The flexor tendons of the thighs are contracted, so that the legs cannot be extended. The skin is of a dirty brown color, and covered with branny scales. Eyeballs prominent, pupils react normally. Ophthalmoscopic appearance of fundus normal. The heart, lungs, kidneys and sexual organs were carefully investigated, and nothing abnormal noted. A line of superficial dulness could be made out, extending transversely across the abdomen, on a level with the umbilicus, and a lobulated mass could be felt in the left inguinal region, but it could not be distinctly outlined. The temperature was normal. Pulse weak and variable, from 120 to 140 per minute. The mental symptoms were substantially those which were described as existing for the past three months.

A diagnosis of an exhaustional confusional form of insanity, proceeding from a dilated and over-filled colon, was made. Large rectal injections were ordered, containing in each pint of water two ounces of listerine and one drachm of common salt. Tonics were also ordered with cod-liver oil innunction, massage and general faradization.

The subsequent history was furnished by the attending physician.

July 19. Condition unchanged, absolutely refused food. Insisted that her brother had been recently killed.

July 20. First injection given, consisting of about two pints. The tube was passed well beyond the sigmoid flexure. In about an hour the injection came away and with it a considerable amount of fecal matter. Upon withdrawing the tube, its distal end was found to be coated with dark, waxy, adhesive fecal matter, entirely unlike that which came away. After the injection the patient passed into a quiet sleep, from which she was awakened after about two hours, and called for food for the first time in many weeks.

July 21. Marked improvement; pulse 100. No fecal masses came away with to-day's injection, but the tube is still coated as at first. showing that a mass is still retained. Mind perfectly clear and tranquil.

July 30. Continued improvement. Since beginning the treatment ten rectal injections have been given. Occasionally a dark, hardened fecal mass comes away.

August 14. Able to be out of bed, but walks with great difficulty, owing to the muscular wasting. Mind perfectly clear, but retains only an indistinct recollection of the time of her illness. For the past two weeks her bowels have acted without cathartics, and her appetite is excellent.

Nov. 20. No longer suffers from constipation, and her health is better than it was before her illness."

It is not an easy matter to empty the colon of feces which have been long retained. Active cathartics will not suffice. Indeed their prolonged use, or rather abuse, is a most potent factor in the causation of the condition. Salines in moderate quantities will sometimes succeed in washing out the retained masses, but after the abuse of purgatives, a sedative is often the most effectual in clearing the bowels. A most useful one under such circumstances is a pill containing iron and belladonna. I have found the bowels to act after a few days' rest, when croton oil had failed to produce an evacuation. But the most satisfactory plan for relieving the colon of retained feces, is the use of lavage. Copious injections of warm water will dislodge masses of feces that cannot be removed in any other way. It should not be forgotten that several injections may have to be given before any old feces will be brought away, and that it often takes daily injections for several weeks to completely empty the bowel, and entirely remove all the old hardened, dark feces.

The following conclusions are submitted:

1. Long continued partial retention of feces is common.
2. Such retention is usually harmless.
3. Retained feces undergoing putrefaction may, at any time, acquire poisonous properties.
4. Retained feces may produce either local or constitutional symptoms.
5. The principal local conditions produced by retained feces are typhlitis, appendicitis, and peritonitis, either localized or general.
6. Retained feces, through the poisons produced in them, are capable of causing any constitutional symptoms which can be manifested through the agency of the central nervous system.
7. Among the toxic effects of such stercoræmia may be mentioned fever, convulsions, coma, insomnia, headache, neuralgia, vertigo, anæmia, diarrhœa, constipation, incontinence of urine and feces, insanity, etc.

Dr. N. S. Davis, Jr. of Chicago, remarked that there are in addition to the cases referred to by the essayist, other cases in which there is a moderate amount of retention of feces. There are cases in which there are regular movements of the bowel, but not thorough evacuation. The symptoms of more or less distressing character are promptly relieved by free evacuation. The symptoms are most frequently some pain in the back; sometimes a slight, but usually a considerable degree of anæmia. These cases are frequent. The daily movement is rather a spilling over of the bowels, than a movement. Only a comparatively small amount is evacuated, and not enough to relieve the retention which exists. These cases can be relieved by enemas.

Dr. Herrick spoke of the retention of feces as due to disorders of intestinal secretion.

Dr. Fuller, of Massachusetts, reported at some length the case of a woman whom he had relieved seven times of a fecal impaction, following childbirth, in whom the autopsy revealed several regions of intestine in which the walls were so thickened, as to narrow the calibre to so great an extent that the finger could not be made to pass through.

Dr. Newcomb, of New York, referred to two cases similar to those which had been described. One was that of a man brought into the hospital in a moribund condition. The autopsy revealed no lesion of serious nature except that the entire colon packed full of hardened feces. The speaker had also made some investigations in regard to the anæmia which is relieved by laxatives. He had been engaged in the investigation of the blood of his patients whom he was treating with the chalybeate pill. He concluded to test the efficacy of laxative treatment without the administration of iron. He found that up to a certain point the patients seemed to do just as well as they did under the Blaud's pills, but beyond that the iron was required. He had concluded therefore, that, as Alonzo Clarke has asserted, the most important factor in the production of anæmia is the imperfect action of the bowels.

Dr. Greenlee, of Kentucky, reported a case of impaction of feces in the sigmoid flexure.

Dr. J. M. Anders, of Philadelphia, agreed with the essayist that typhlitis is an entity, and as well in regard to the stercoræmia of the French. He believed also that the fever is sometimes attributable to this cause. In a certain class of cases, however, another explanation must be had. In many of these cases, no doubt, the retained fecal matter acts as a mechanical irritant to the coats of the intestine, setting up a catarrhal condition. This condition is frequently not followed by diarrhœa, but tends to increase the constipation. Owing to this condition we have absorption markedly interfered with. In many of these cases, indeed, I have no doubt that the final condition, fecal impaction, stands in the relation of cause rather than that of effect.

Dr. S. Solis-Cohen, of Philadelphia, said that the paper was of interest to him because he had seen several cases similar in character to those reported by Dr. Christopher. One remarkable case occurred occurred in connection with laryngeal ulceration. The early symptoms pointed somewhat to typhoid, but the later course of the case was such that this disease could not be diagnosticated. It was decided to be a case of stercoræmia and was promptly relieved. In another case he was summoned in great haste to a patient of a homœopath who was said to be dying of "pneumonia." Physical examination showed entire absence of pneumonia. There was rapid breathing, great depression, temperature 102° or 103°. Impaction of feces was discovered and treatment promptly dissipated the supposed threatening pneumonia.

In the clinic of Professor Bartholow, of Philadelphia, several women presented themselves who feared that they had committed the unpardonable sin. Professor Bartholow promptly diagnosticated the cases as those of obstinate constipation. Gross, the speaker said, has given us the term, "incontinence of retention," and so we might say, the diarrhœa of constipation. Among the other blunders of diagnosis which had come under his observation, the speaker mentioned that in which confusion had arisen between fecal impaction with its attendant pain and renal colic, in which irrigation of the bowel promptly dissipated the symptoms.

Dr. Christopher, in concluding the discussion, remarked that he also had seen confusion between fæcal impaction and renal colic. Not long ago a patient had presented himself who supposed that he was suffering from the passage of a gall-stone. Being always inclined to test the possibility of its being due to fæcal impaction, he ordered copious injections of hot water. The pain was much ameliorated by the enemata, but after a few days the patient again presented himself carrying with him a renal calculus which he had passed. Yet an important lesson was found in the fact that the hot water injections to so great an extent relieved the pain of the renal colic.

The speaker thought that if we would give up the treatment of diarrhœas with bismuth and opium, and treat it like our fathers did fifty years, by the administration of a copious dose of calomel, our results would be better. I am convinced, he said, that many of the diseases which go by the name of "itis" at their termination are due to auto-intoxication from retained fæces.

(To be continued.)

Scarlatina.—Lauder Brunton speaks favorably of arsenic, when the tongue remains red and irritable during convalescence. Carbonate of ammonium in frequent doses is greatly recommended.

Ringer recommends chlorine-water for sloughing throat; arsenic and nitric acid for persisting red tongue in convalescence; cold compresses to the throat throughout; ice to be sucked; gray powder for inflamed tonsils; packing throughout, especially on retrocession of rash; veratrum for convulsions.—*Times and Register.*

NOTES ON SOME INTERESTING CASES AT THE NEW YORK MOTHERS' HOME MATERNITY HOSPITAL.

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In May, 1888, the New York Mothers' Home Maternity Hospital began its work in this city. It is located at 531 East 86th St., in a large double house containing thirty rooms. This building has been completely renovated and very particular attention was given to the plumbing, it being entirely renewed. The institution also includes within its grounds 525 E. 86th St., a three story frame house of ten large rooms. These buildings, however, are simply for temporary use, as the erection of a wing to the large new hospital has been started; the size of this wing is 65 by 140 feet, and it will be five stories high. The class of patients received are as a rule the poor and unfortunate, and no discrimination is made in regard to religion, color or nationality. Extreme cleanliness is the rule throughout the whole institution, an important part of which is the laundry, it being in constant requisition, and all the clothing is boiled in an antiseptic solution. The pregnant, parturient and puerpural women are kept separate. There is a special room for delivery on the same floor with the lying-in wards. On another floor a special separate room for any case of fever that might possibly develop, but it has never been necessary to use it for that purpose. There is also one room set apart for any serious operative case, and there are also rooms for private patients. The food supplied is wholesome and plentiful, and suitable to the condition of the inmates.

Every patient on entering is given a general bath and has her clothing changed. Her urine is examined, her condition noted, and she is prescribed for if any remedy is indicated. In the delivery room during attendance on the parturient woman all the usual antiseptic precautions are taken, the hands being frequently dipped in a warm solution of creolin. The discharges are received into a pad of muslin about two and a half feet square and rendered thoroughly aseptic. After labor in cases where it is indicated the vagina is douched with simple warm water that has been boiled, or warm water with creolin added. This solution is also used for small lacerations or abrasions of the vagina.

Lacerations of the perineum if at all extensive are sewn immediately. The binder used is of aseptic muslin doubled, about three feet in length and fourteen inches wide, rather thick and soft, thus coaptating smoothly to the patient's shape, and a similarly shaped piece is folded and placed against the vulvæ. This pad being large and thick absorbs the lochial discharge and is changed frequently. Ergot is very seldom used and then only when good contractions of the uterus cannot otherwise be obtained. The stronger patients are permitted to sit up for a short time on the sixth day but they remain most of the time in bed for ten days. Every patient is expected to nurse her own child unless there is some contra-indication. Several of those admitted were either tuberculous or syphilitic, and had been refused admittance to other institutions. Others were addicted to spiritus frumenti or had suffered from insufficient food and hard work.

The infants have a large bath room, each one having a separate bath tub, and a large drawer containing its own towels, soap, powder, etc. In cases of ophthalmia neonatorem, the treatment consists of applications of a two per cent. solution of nitrate of silver, frequent cleansing, and if the inflammation is very acute, iced applications are made.

Since the opening of the hospital in the city to May 1, 1892, there have been five hundred patients delivered with but two deaths from puerperal disease, and when we consider their condition on entering, most of them being homeless or from tenement districts, having been without fresh air or wholesome food and often in a wretched physical state, this record is indeed very good.

One patient was taken ill in February, 1890, with the prevailing catarrhal influenza or la grippe. She was far advanced in phthisis, and died from pneumonia nearly a month after her confinement. Three of the patients suffered with acute croupous pneumonia shortly before and during labor, but it in no way interfered with the delivery or the convalescence. Having been the only visiting surgeon for most of the time since the hospital was opened and having seen all these cases, I think that a few notes on some of them may be of interest.

Case 1.—Funis Presentation.—This patient was a tall, unhealthy looking primipara, æt 24. The head presented with the cord which had several inches prolapsed, and was found to be pulsating irregularly. A catheter and tape was first employed for its reposition, but the tape constricted the cord to such a degree that the method was condemned as dangerous, and the patient was placed in the knee and chest position as advocated by Dr. Thomas, and the cord replaced by the fingers. The forceps was then resorted to but the child was dead when delivered. There was also a second case of funis presentation occurring in a still birth at seven months.

Case 2.—Contracted Pelvis.—Æt 19, primipara, patient is very lame, there being a difference of two and three quarters inches between the length of the lower limbs. The left leg is well developed, while the right is stiff and small, the result of an unreduced dislocation of the head of the femur when she was a child. Pelvis at the brim D shaped, the abridgement being on the right side and the narrowness in the transverse diameter. The child's head in descending passed to the left curving around the obstruction. The contractions of the uterus were exceedingly strong, and the head would strike with each pain so forcibly against the obstruction that I believed that the safety of the child demanded immediate delivery, and applying my axis traction forceps it was easily performed. The child was apparently all right but after twenty-four hours a large hæmatoma was found under the scalp on the right side from rupture of the temporal artery caused by the pounding of the head against the deformed brim of the pelvis. The child died in thirty-six hours.

Case 3.—Contracted Pelvis.—Æt 28. On the entrance of this patient she brought a note from a physician in this city in which he said craniotomy would probably be necessary for the delivery. As far as I could learn from the patient and her friends she had been in labor for six days, most of the time with a midwife, three physicians had been consulted and two of them after an examination had come to the conclusion that craniotomy would have to be resorted to. The patient was in fair condition and on making an examination, I found some contraction of the conjugata vera.

The head wedged in a transverse position, I applied my forceps with one blade over the face and the other over the occiput, drew it down into the cavity of the pelvis and then rotating the occiput forward, reapplied the forceps to the sides of the child's head, and the delivery was easily accomplished. The sides of the parietal bone where it came in contact with the sacrum was marked by an abrasion which afterward sloughed. Both mother and child did well.

Case 4.—Congenital Dislocation at the Knee.—Æt 24. Primipara. In slow and dry labor for twenty-eight hours. Breech presentation with limbs reflected on the body. When the cervix was thoroughly dilated, the labor did not advance as it should, and after each pain the breech would disappear into the uterus as if some obstruction was present and forced it back. The nurse made the remark "that something is keeping the child back." The accompanying photograph taken the next day shows the dislocation and position of the leg which during and after the delivery was approximated tightly to the front of the body. The dislocation reduced itself naturally and the knee became all right.

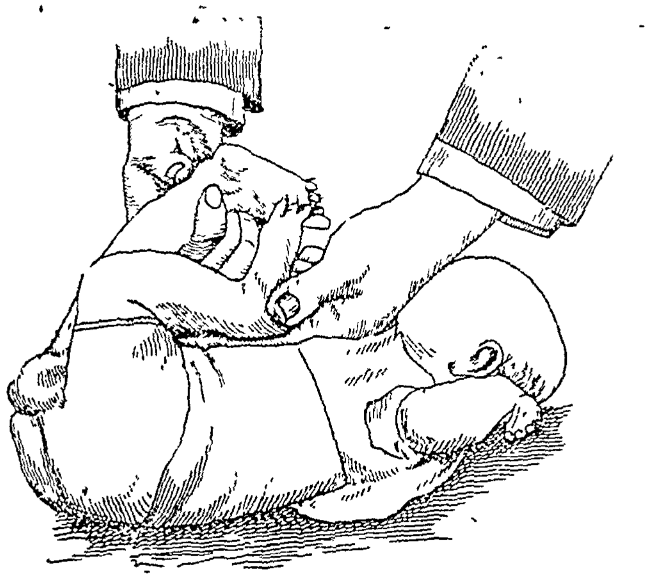

FIG. 1.

Puerperal nephritis is of so frequent occurrence and of so much importance that it is hoped that the following will be of some interest to the reader: Thirteen cases of puerperal nephritis were noted, and there were seven cases of puerperal eclampsia, one of them being fatal. The treatment of puerperal eclampsia where prophylaxis of the disease has not been attempted, should consist of *washing out* and purifying the blood, digestive and genito-urinary tracts, removing the renal congestion, quieting the nervous system and renewing the supply of normal healthy blood by the ingestion of a proper diet both liquid and solid, and mental as well as physical rest along with plenty of fresh air.

Case 5.—Puerperal Eclampsia. Twins. Very Pendulous Abdomen.—Æt. 29, primipara; very thin and delicate, weighing about 100 pounds, has an extremely pendulous abdomen. Labor begun at 9 A.M.; at 3 P.M. the first stage was completed; at 7 P.M. the first child was delivered by the breech. It weighed about 8 pounds; when the breech began to appear at the vulvar opening, there came quite a long delay which demanded interference, the delivery was quick and easy, but the child was dead. The second child was also a breech presentation. After the delivery of the first, the pains ceased for five hours and as there did not seem to be any prospect of them starting again the membranes surrounding the second child were ruptured, a knee seized and extraction performed readily; the child was in a state of asphyxia, but it recovered. This one was more frail than the first, which did not live. Thirteen days after delivery the mother was seized with a severe eclamptic convulsion but there was but one single attack. There was but a slight trace of albumin in the urine and no œdema.

Case 6.—Eclampsia.—Clara, æt. 38; primipara; extremely anæmic. She had but one convulsion shortly before delivery, which was instrumental; child lived. She continued delirious for a long time; her perineum was lacerated, but her physical condition was so poor, being syphilitic, that it did not unite. Her urine was drawn by catheter and found to contain 40 per cent. bulk albumin. She was purged by magnesia sulphate, and given large quantities of Maine Highland water to drink. The urine increased in quantity; its specific gravity lessened, and she left the hospital without a trace of albumin in her urine. Did not return for secondary perineal operation.

Case 7.—Eclampsia.—Clementina, æt. 18; primipara. This was the only fatal case of eclampsia. She came in two days before delivery, suffering with alcoholism and nephritis. She had been a hard whisky drinker. There were two convulsions before delivery, and eight severe ones after. She continued in a state of stupor, alternating with delirium, until she finally died of exhaustion. Labor was induced by Barnes' dilators, and when the cervix was well spread I applied my axis traction forceps and a healthy living child was extracted.

Case 8.—Eclampsia.—Marie, æt. 40; an emaciated primipara; legs œdematous; severe headache; urine 30 per cent. bulk albumin. Taken with an *eclamptic* convulsion about two hours after delivery. They recurred four times. Potassium bromide and chloral hydrate each 15 grains were given. Hot air bath. Two ounces of magnesia sulphate in glycerine and water were given by rectal injection. Highland water, for its absorbent and diuretic action, was given in large quantities. She was also put on a milk diet. Recovery gradual but complete.

Case 9.—Eclampsia.—Emily, æt. 18; primipara; legs very œdematous; has severe headaches and black motes floating before her eyes. Urinates frequently, it is a very dark amber and heavily loaded with albumin. Appetite poor, *tongue natural. Has taken one drachm* of sulphate of magnesia for the past few days, once daily. This has reduced the œdema somewhat and causes two passages daily. Has been constipated; after examining her on her return to the ward for waiting women she had a convulsion, her first. She was then given bromide and chloral, of each 15 grains. First convulsion at 12:30, noon; second at 1:40 P.M., and third at 2:40. Barnes' bags introduced and labor brought on; delivery instrumental. She was given hot baths and placed on a milk diet and Highland water, and made a rapid recovery; child healthy.

Case 10.—Eclampsia and Amaurosis.—Delphine, æt. 16; primipara. Shortly after entrance at 3 A.M., was taken in eclamptic convulsions. She had four attacks before four A.M., when I saw her and delivered instrumentally. She had been given bromide and chloral, 15 grains each, but in spite of that and hot baths had attacks every hour until eight A.M., when a hypodermic of morphia $^1/_4$ grain was given. She then began to sleep and perspire somewhat. At eight P.M., she had three very severe *attacks*, she was *then given* two ounces of magnesia sulphate by rectal injection, which caused a good evacuation, although she had been taking laxatives, and there were no more convulsions. The giving of sulpl [illegible] by injection is a very useful procedure, [illegible] of coma, when they cannot swallow. The patient was plump and strong. Her urine was drawn by catheter and found to contain 50 volumetric per cent. albumin. After coming out of the convulsion she was blind and remained so for two days, when her sight was gradually restored. She was put on Highland water, and the first two days drank over a gallon. The albumin persisted for a few days, and then completely disappeared. Beef solution was given for the hydræmic state of the blood, and the Highland water for its diuretic property and to assist the defective elimination of urea and for its good effect on the circulation.

Case 11.—Eclampsia.—Minnie, æt. 23. Admitted to the delivery room of the hospital with cervix well dilated. Normal presentation. In about half an hour she was noticed to be in that nervous state that precedes the eclamptic seizure, the bag of water was ruptured and in a few moments after some strong pains she was delivered of a *healthy infant.* The delivery took place at 12 M. She then slept until 3 P.M., when she had an elamptic seizure of considerable violence; before 8 P.M. she had five attacks. Urine 10 volumetric per cent. albumin.

Treatment.—When the nervous symptoms were noted she was given ten grains each of potassium bromide and chloral hydrate, which caused her *to sleep for nearly three hours.* The eclamptic seizure was preceded by an attack of vomiting. After the attack she was given a rectal injection of magnesia sulphate in a small quantity of water. The bowels were well evacuated, and the urine drawn by catheter. She was placed on Highland water in large quantities, and after a time her splitting headache and nervous twitching disappeared and the urine became normal.

Case 12.—Christine, æt. 23; primipara; acute puerperal nephritis. For about three weeks before labor limbs œdematous, which extended above the abdomen. *Has had very* sever[illegible] urine on examination 50 volumetric per cent. [illegible] ore labor came on, was in a ne[illegible] eclampsia; she was given brom[illegible] each, but did not sleep; labor pains started at 4 A.M., and at 9 A.M. she was delivered *of a healthy infant, without convulsions. On the second* day after delivery she had severe abdominal pains, probably due [illegible] h turpentine stupes relieved; her [illegible] and had 33 per cent. bulk albumin. On the third day after delivery she had considerable diarrhœa.

Treatment.—Magnesia sulphate and Highland water. She states that when she takes the water, the pain in the abdomen and back is relieved. The pulse kept at 160, and temperature ranged from 102 to 103½. Lochia normal. Both mother and child did well.

Fig. 2 and 3 are from photographs of the front and back of the left hand of a child two days old; *it* was *perfect in* all other respects. The thumb was of normal size, but the fingers were without either bone or cartilage. The mother gave a history to the nurse of a maternal impression.

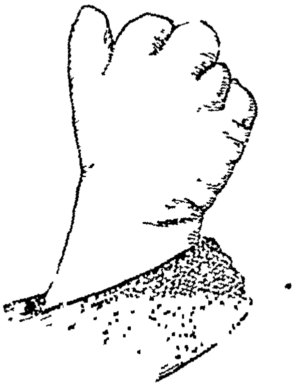

FIG. 2.

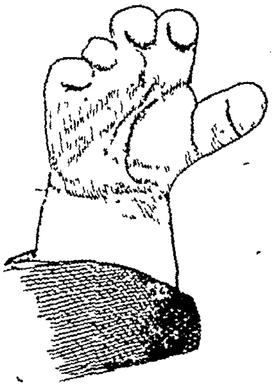

FIG. 3.

Case 12.—Twins; patient æt. 36; v-para; labor began at 6 P.M.; at 3 A.M. was delivered manually of the first child by the breech; the delivery was immediately followed by a placenta, which apparently belonged to the first child. The pains continued very strong and the second child was very soon delivered by vertex *presentation,* the *body* being *extracted manually.* This child was found asphyxiated, but under artificial respiration, counter irritation, etc., it was soon crying loudly; after the second child's cord was cut *it* was found to belong to expelled placenta. The other placenta was removed manually. In the first hundred cases there were four cases of twins and two of these labors were primiparous.

No. of cases, 4; both males, 2; both females, 2; one of each, 0. Of the last pair, one child was dead and macerated, the other only lived two days. In two cases *the* placenta was double and in the other two it was single, but all of them had two amniotic cavities. There were no cases of mastitis *in* the hospital and the application of the breast binder is not used as a routine measure.

There were two cases of spurious pregnancy, both detected on examination immediately after admission. There was one case of *induced labor* at eight months for puerperal eclampsia, both mother and child did well. There was also one case of antipartum hæmorrh [illegible] aged 25, due to shortness of the cord; There were three (3) cases of placenta previa marginalis; in *none of them* was either mother or child lost, and *in none* was the hæmorrhage very severe. In the last hundred cases there were but five applications of the forceps. It was applied twenty-eight times.

Podalic version was performed six times. There were four cases of face presentation; two of them were delivered by natural efforts, and two by the forceps; all the children lived. The youngest patient was 13 years old, there was another not quite 15. The labors of both were normal. There were four cases of footling presentation. No cases of postpartum hæmorrhage that could not easily be controlled.

There was one case of cephalhæmatoma, which enlarged considerably every time the child cried. The labor was easy and the os not rigid. The cranial bones were fragile and the fontanelles large. There were no cases of transverse presentation.

776 Madison Ave.

ON April 26, 1892, Professor James Tyson presented his resignation as Dean of the Medical Faculty, University of Pennsylvania, to take place with the termination of the business incident to the session of 1891–2.

PULMONARY CONSUMPTION:—ITS DIETETIC AND REGEMINAL MANAGEMENT.

Read by title in Practice of Medicine, at the Forty third Annual Meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY EDWARD F. WELLS, M.D.,
OF CHICAGO.

Pulmonary consumption, the greatest enemy of mankind, is not an incurable disease. However, if the unfortunate subject of this disease is to be given an opportunity to escape the fate of the majority he must be surrounded by favorable conditions and must submit to certain necessary rules and regulations. I deem it an essential preliminary to success that there should be a happy combination of interests and hopes between patient and physician. The patient should be candidly informed of the nature of his malady; of its varied and tedious course; of its leading symptoms and complications; of its dangerous character; of the possibility of a cure and of the necessity of his exercising to the utmost his powers of patience, hope and confidence. On the other hand the physician must have a wide, varied and exact knowledge of medicine in general and of phthisis in particular; he must know and believe that the disease is curable; he must be kind, considerate, resourceful, hopeful and enthusiastic and, above all other qualities, he must be able to transfer his convictions, enthusiasm, and hopefulness to his patient. That this mutual confidence may be obtained and retained, week after week, month after month and year after year, until at last the victory is won, or defeat has been suffered only after every point has been stubbornly contested, requires a most profound knowledge of human nature and the highest qualities of the physician.

One of the most striking features of consumption is the progressive loss of body weight. In the presence of advancing local affection this is so constant that it affords a very accurate index of the progress of the case. Experience has abundantly proven that in a great many cases it is possible to stay the waste of tissues and even to cause the patient to gain in weight by giving careful attention to the diet, and that under these circumstances the pulmonary trouble is held in abeyance and the local lesions have a tendency to heal. This being the case it is evident that the subject of feeding our tuberculous patients is one of prime importance and worthy of the most careful consideration.

Anorexia and defective powers of assimilation are present in those cases in which the stomach and intestines, including their adnexia, are affected by organic disease. Loss of appetite is also a prominent feature in many cases during the height of a febrile attack, and in a certain proportion of patients without any obvious cause. However the rule is, especially in the earlier part of the attack, that the patient has either a good appetite, with moderate capabilities of assimilation, or he can receive, digest and assimilate liberal quantities of food, although he may have no desire for it—there being a state of apathy rather than one of disinclination. It is in this last and largest class that we are able to utilize our knowledge of dietetics to the greatest advantage, and that this paper may not be unduly extended my remarks are confined, in the main, to this class of cases.

Foods which contain nourishment in the most concentrated form should constitute the basis of our dietetic management. In order, however, that the best results may be attained these must be accompanied by properly selected adjuvants, correctives and —padding. By the last term I mean certain bulky articles of food having but little nutritive value, but which are necessary for the greatest digestive and assimilative activity. For many years I have discussed this subject very freely with my patients, inquiring into their preferences and sensations and obtaining their opinions and estimates, and the following diet table is the result of my experience. In practice it is suitably modified to meet the surroundings and other exigencies of the individual case for which it is prescribed:

MENU.

On Rising, 6 A.M.

Hot milk and Vichy. Hot meat broth.
Milk tea, tea made with milk.

Breakfast, 7 A. M.

Rare steak or loin chops. Mutton chops with fat.
Bacon or ham, with fat.
Eggs.
Potatoes, Saratoga chips. Fried mush.
Toast, with cream or butter,
Oatmeal, wheaten grits or rice, with cream.
Fruit.
Coffee or coca, made with rich milk.

Lunch 10 A. M.

Milk. Egg nogg. Meat broth.
Stale bread. Zweiback.

Dinner, 12:30 P. M.

Beef, mutton or chicken broth. Oyster or turtle soup.
Raw oysters. Raw clams. Fish.
Poultry. Roast beef or mutton. Game.
Potatoes. Cauliflower. Green peas. Tomatoes.
Celery. Pickles.
Asparagus. Lettuce. Spinach.
Stale bread. Graham bread. Corn bread.
Baked apples with cream. Ripe fruits.
Custard pudding. Pie. Cake.
Milk. Milk coffee.

Lunch. 3:30 P. M.

Milk. Koumyss. Clabber
Beef tea. Thick soup. Meat broth.
Ham sandwich.

Supper. 6:30 P. M.

Thick meat or fish soup.
Raw oysters. Cold meats.
Stale bread. Crackers. Graham bread.
Meat jellies. Neufchatel or Cottage Cheese. Fruit jellies.
Fruit. Ice cream. Cakes.
Milk coffee. Milk tea. Egg nogg.

Lunch. 9:30 P. M.

Hot milk. Beef tea. Meat broth.

To this list may be added such other foods and drinks that the appetite craves and are found to agree. Any article of diet which the experience of the patient has shown to be detrimental is to be omitted.

Food should be taken in as large quantity as possible. At each lunch from a half-pint to a pint of liquids should be taken, and at each of the three principal meals an equal quantity of milk, or of coffee, tea or cocoa, made of rich milk and cream, should be ingested. There is no objection to changing the dinner hour to 6:30 P. M., and taking a midday luncheon equivalent to the supper as prescribed. Meals should be never hurriedly taken and should be always accompanied by cheerful conversation. Eating should be made one of the principal objects of the patient's life.

The diet should be varied to meet special indications or the patient's desires. If there is little or no fever, and if starch, sugar and fats are well borne, foods containing these principles in abundance should be freely employed. If there is much fever, or if there is apathy or antipathy toward eating the diet should be composed, mainly, of animal foods and very concentrated nourishment, with fresh fruits and vegetables.

If there is a tendency toward flatulent distention of the stomach or bowels after eating, bread and other farinaceous articles of food should be taken sparingly. If the bowels become constipated, fruits, coarse vegetables, corn or graham bread should be largely eaten, and if diarrhœa supervenes avoid the kind of foods above mentioned.

At the very beginning of treatment the patient should be impressed with the great importance of certain hygienic and regimenal regulations. These should be fully discussed with him and he should be made to understand the reasonableness of the rules prescribed in order that his hearty and intelligent co-operation may be secured. The peculiarities of the patient must be fully weighed but the following points I consider with every patient.

Consumptives are usually persons who have formed strong attachments for their home, family and friends and do not readily adapt themselves to changed surroundings. For this reason home is the best place for the majority of these patients. This does not apply to the comparatively small contingent of phthisical patients who are always in touch with their surroundings and who are natural travellers. With these travel, change of scene and climatic treatment may be considered, but a change of residence should not be undertaken without thoughtful consideration and special advice from the medical attendant.

The residence should be exposed to sunshine and sheltered from cold and raw winds. The rooms should be well ventilated, free from draughts and comfortably warmed and furnished. The home should be entertaining, pleasant and cheerful. The patient should sleep alone.

Pleasurable exercise, such as riding, boating, walking, traveling, games, etc., and non-exhausting employment which interests and does not expose to deleterious influences are beneficial.

At frequent intervals the patient should practice forced breathing, both inspiration and expiration. As a measure of the ærial capacity of the lungs he should count aloud as many as possible without taking breath.

The clothing should be light and comfortable. That next the skin should be of wool and of fine texture. In cold weather the clothing should be sufficient to prevent chilliness, and the chest should have extra protection.

Once or twice weekly the patient should have a hot sponge or tub bath. The surface should be quickly rubbed to a glow and enveloped in warm woolen garments. The bath-room should be comfortably heated.

Should night-sweating supervene, bathe the surface with very hot water or vinegar and, after drying, rub with flour, starch or other absorbent powder.

Twice a day there should be applied to the surface of the chest a stimulating linament, composed of equal parts of turpentine and oil of hyoscyamus or oil of sassafras. Mustard plasters and hot applications may be made use of for the relief of local pains. These failing to give relief, small blisters may be employed.

The cough should be restrained as much as possible and endeavors made to expectorate with every effort. A dry, irritable cough, without expectoration, should be held in check by proper remedies.

The sputæ should be received in a cup containing a quantity of moist absorbent and antiseptic material. The contents should be removed once or twice daily and the cup cleansed. Moist antiseptic cloths may be substituted for the cup. The cloths and the contents of the cup should be burned.

Catarrhal colds should be avoided by every known means and if they occur they should be treated with the utmost care and the treatment continued until the disappearance of every trace. The patient should consult his physician at once upon the appearance of new symptoms, the significance of which may be unknown to him.

The patient should observe and record carefully his condition from day to day upon suitable blanks; such records afford information of the greatest value in formulating prognoses and lines of treatment. He should bring them along when he consults his physician. "With careful instruction an intelligent patient may become," to a limited extent, "his own observer and, to a certain extent, his own medical attendant" and to his advantage.

163 State St.

DOMESTIC CORRESPONDENCE.

Laboratory Work in Medical Schools.

One of the most interesting papers presented at Detroit was Dr. Vaughan's earnest plea for more laboratory work in our medical schools, read before the Association of Medical Colleges. The course of study is now lengthened to four years, and the term of nearly all medical schools is now more than six months. There is time for this work. The European medical education is superior to the American only by the facilities which it offers in laboratory instruction. It is for histology, pathology, bacteriology, clinical diagnosis and multiple dissections that our young medical men go to Germany.

The method of instruction at the bedside is recognized by educators as essential. This is only possible in large cities. The study of chemistry, pharmacology, histology, pathology and surgery in the laboratory could be as perfectly carried out in a village of ten thousand inhabitants as in a city of a million. Yet the laboratory method of teaching has not been undertaken in the majority of medical schools.

In speaking of proposed laboratory work, the writer was informed by an old college man that the time for laboratory instruction had not come, and that this was the age of clinical teaching. This is a position that can not be maintained. The universities are establishing courses preparatory to medicine and leading to the B. S. degree, in which laboratory work is a prominent feature. The men who have completed these courses are going into our medical schools and they are loud in their denunciation of the antiquated manner in which medicine is taught. They are forcing attention to the methods of instruction and proper sequence of studies and some of them are now able to demonstrate the more rational ways of teaching in their own class rooms.

It has been asserted that our average medical student can not and will not do laboratory work. This is an error, as the teaching of chemistry during the past ten years, at least, has shown. If any further evidence is needed, the writer may be allowed to introduce his personal experience at the College of Physicians and Surgeons, of Chicago. Last year twelve hours a week of laboratory work was added to the two junior years. At first the students complained. A few rebelled. They were held firmly to their work and at the end of the year all dissatisfaction was gone and a new spirit, the scientific spirit, pervaded these classes.

The expense of laboratory teaching has been urged to bar it out of our schools. It is a fact that laboratory work is expensive. The proper housing of the laboratories cannot be much short, for the average class, of $500.00 each. Thus the laboratories for a school of one hundred students ought to cost not far from $50,000.00. This is in addition to lecture rooms and clinical facilities. The equipment would be a variable quantity and might be as low as $50.00 per each student or as high as $200.00. Allowing $600.00 as the capital invested, the interest alone on this amount, at six per cent. would raise the expense to each student $36.00. Add to this the material consumed and the expense for building, equipment and material cannot be short of $50.00 for each student each year. Admitting that the expense of laboratory teaching is great, it is no argument against its adoption. Students are willing to pay for what they get. Those schools that offered clinical facilities ten years ago secured the large classes and the large fees. Those schools that now offer laboratory instruction will secure an increased attendance.

The fact that most of the lectures are given in our medical schools without financial compensation or for a nominal salary makes it possible for many medical schools to hobble along without an income of any size. The adoption of laboratory instruction means the payment of salaries to laboratory instructors. There is a feeling among young medical men that it pays to give a surgical clinic before a class of students but that there is no return for eight or ten hours laboratory work each week before the same class. The writer believes that this is a mistake. It is a fact that laboratory work requires more time and study on the part of the teacher than any other form of teaching. There are very few men in medicine to-day who can properly conduct a laboratory exercise. But for the capable it will pay.

The loose manner in which the business of many of our medical schools has been conducted would be disastrous if they had large laboratories. Like the factory, the laboratory must have an accurate and centralized government, a simple and rapid system of book-keeping and the most conscientious scholastic supervision.

The results, in the productions of scientific medical men, by the introduction of proper methods of medical study, almost any experienced educator would be willing to predict. The quality of medical culture will be increased The medical schools will attract a larger proportion of college bred men. The lecturers will cease to cram their students with the pap which has so long been doled out to them and the scientific spirit will permeate the post-mortem room and the clinical amphitheatre, and last of all the pages of our medical literature will cease to be disgraced by pages worthy the age of witchcraft.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

To answer the many inquiries of the gentlemen who were present at the operations at Harper Hospital, during the late meeting of the Association, I wish to state that all cases of laparotomy recovered. In the first difficult case of Dr. Joseph Price, of Philadelphia, where he predicted that a fecal fistula might develop, this actually took place, but by keeping in the glass drainage tube for three days and then substituting the rubber tube and also by keeping the tract perfectly aseptic with hydrogen peroxide and covering the wound with bi-chloride gauze, the fistula gradually closed up, in the course of three weeks, and the patient is now about, walking, riding, etc.

The second case where a hole was made in the intestines, which had to be sewed, made a rapid and uneventful recovery.

The case operated upon by Dr. Ross, of Toronto, with the most firm and extensive adhesions recovered rapidly, and left the hospital just two weeks after the operation.

The case operated upon by Dr. H. W. Longyear, of this city, also recovered, union throughout by first intention.

My four cases also recovered without any bad symptoms. This includes the last very difficult case of vaginal hysterectomy. For cervical cancer, the woman being ten weeks pregnant, the clamps were removed in forty hours; with difficulty the woman was kept in bed until the eighth day, on the tenth day she walked about, and on the twelfth day when I arrived at the hospital I was told that the woman had gone home, one hundred and fifty miles from here, saying she was homesick and was now perfectly well. I received a letter yesterday from there stating that she was apparently perfectly healthy. Yours truly,

Detroit, July 16, 1892. DR. J. H. CARSTENS.

The New York Medical Journal and the American Medical Association.

A lengthy comment appears in the editorial columns of the *New York Medical Journal*, upon the affairs of the American Medical Association. To the reader, who has kept a close eye on the editorial columns of this journal, the present article is no surprise; from the fact that it is patent to the most casual observer, that there are a few members of our profession who regard the American Medical Association in the light of the old Romans, who were bound that Carthage should be destroyed.

What appears to give the editor a large scope for finding fault is the report of the committee on the Section on Dermatology which appeared in the JOURNAL of the Association I mention, and which the editor of the *New York Journal* comments on as follows:

"It does not seem that the committee struck the keynote of the trouble. Verily the medical profession has progressed since the organization of the American Medical Association, and features of that day and generation are not matters of overwhelming interest to-day. As long as the Association devotes as much of its time to the discussion of ethics, carrying it on in such a manner that the report reads: 'The excitement was so intense and the discussions so heated that we deem it prudent to omit them,' so long will the more prominent members of the American medical profession refrain from attending the meetings."

It is well that the reader takes particular note of the last two lines, from the fact that it is generally supposed that the American Medical Association contains a large proportion of the prominent members of the profession, excepting the editor of the *New York Medical Journal.*

The following paragraph brings prominently into view the professional patriotism of the editor of the *New York Journal*, which if it were true, nobody would find fault with.

"Contrast the program for the coming meeting of the British Medical Association with that of the recent meeting of our Association! And not only for this, but for many more years has the former been infinitely better. It works scientifically; ethical discussions are as alien to it as they are within a first class scientific organization of any sort."

Two years ago, the writer attended a meeting of the [illegible]

or a

ish Medical Association, and knows from personal observation that the above statement is not true in every particular. He was afterwards informed while in London, that it was a certain Birmingham doctor's "show" and that the animals were not all well trained.

Permit me to quote the last paragraph in the editorial, because it points out the animus of the whole article.

"Insistence upon discussions has resulted in the organization of the various special societies and of the triennial meeting of a general congress of all these societies. Some day the American Medical Association will realize that tomes on ethics will not be looked upon as its legitimate work; and we hope this awakening will not come too late to enable the Association to regain the ground it has lost."

It will be readily perceived that this article written by the editor of the *New York Medical Journal* was not presented to its professional readers in the interest of the American Medical Association, but on the other hand for the benefit of the special societies, which do not have a place within their organizations for the general practitioner; neither do these organizations have any sympathy with him, only when he supplies them material, as the jackal does the lion.

There is no organization from the Atlantic to the Pacific, from the river St. Lawrence to the Gulf of Mexico, but the American Medical Association, where the general practitioner can make himself at home, can discuss medical questions with, and receive information from the best medical talent in this broad land. The founder, Dr. N. S. Davis, of this great American Medical Association will live in the minds of the profession, when its would be destroyers have long since been forgotten. J. F. JENKINS, M.D.

Tecumseh, Mich., July 15, 1892.

A Necessary Correction.

Southern Surgical and Gynecological Transactions, Vol. IV, page 163.—"Dr. George A. Baxter, Chattanooga, Tenn.:

I declare myself positively in favor of early operation in these cases, but I want to relate a case such as will be, and is used against it. A gun specially loaded for the object was discharged at a distance of less than twenty feet, and one negro had shot another in the back, seventeen balls by actual count entering the right kidney. One of them was detected underneath the skin, further around to the right side; and one, evidently striking some portion of the spinal column, was detected in the clothes. *Fifteen balls, however*, could not be found by those gentlemen first having the case in charge. The man came under my care six days after the injury, with no indication of peritonitis; but he had at that time an enormously enlarged liver and stomach. He had had hæmoptysis more or less since his injury, and the symptom that brought me into the case was hiccough, which lasted six days. Now, gentlemen, I did not probe for these balls. I did not operate, since what mischief was to accrue had done so already, and an operation could accomplish nothing at that late date. The negro had, however, I am persuaded, perforation of stomach, liver, and diaphragm. That negro got well, and is a perfectly well man to-day after two months' sickness. At no time had he a temperature above 100½°. He had had constant vomiting of bile for nearly three weeks, and he had a little discharge of blood occasionally for a month from his stomach. The hiccough gradually subsided only after six days. These are the kind of cases that will be urged against operative interference, etc."

Above is quoted a case reported by me in the last meeting of the Southern Surgical and Gynecological Society, in the [illegible]f debate, which from slight error in the report over[illegible]y me in the proofs, perverts my meaning so grossly as to make the case ridiculous, as well as rob it, by seeming exaggeration, of the scientific interest. I therefore call attention to it in THE JOURNAL previous to a contemplated correction before the Society, which does not meet until next November, for the satisfaction of several excellent surgeons who desire the real case, remarkable enough in its entirety, without the semblance of exaggeration. The sentence, "A gun specially loaded for the object, was discharged at a distance of less than twenty feet, and one negro had shot another in the back, seventeen balls by actual count entering the right kidney," should read *"the region of the right kidney."* That this was so intended is evidenced by the next sentence which says, "One of them was detected underneath the skin further around to the right side," and "one striking the spinal column, was detected in the clothes," which could not possibly have been the case if they all (17) had entered the kidney.

Having explained myself on this point, I am prepared to go further now and explain more fully than this report gives, a case which seems to have attracted a good deal of attention, the facts I desire to add making more plain my *probable*, not positive, diagnosis of liver, stomach, and diaphragm injury or perforation.

The negro had for the space of about three weeks, frequent daily vomiting of bile, this mixed occasionally with slight quantity of blood for first few days, as reported by him. He had an enormously distended liver, resulting in an abscess which pointed high up in front, which abscess was opened by me in the presence of Dr. H. Berlin, of this city, and from which was discharged pus and bile. No ball, however, was found. Is not this sufficient data for the *probable* diagnosis of perforation of liver by one or more of the lost fifteen balls? He had distinctly diagnosed, not by me alone, but by others who saw the case, also a greatly enlarged stomach, with almost constant vomiting, generally of bilious matter, but by his own report, mixed with blood for a few days. This last I did not see as he came under my charge on the sixth day—but in addition thereto, blood by rectum, which I did see and which was also seen by Dr. Berlin. Upon this data am I not right in diagnosing a *probable* perforation of the stomach by the same or another of the lost fifteen balls?

Now for the *probable* perforation of the diaphragm. I have stated that the symptom that called me into the case was hiccough, which lasted six days, gradually subsiding. It is true that here there are other reasons and forces to account for this symptom besides injury or perforation, but considering its persistent character, the fact that the direction of the balls were known, both by the one which still remained under the skin higher up and to the right side, and the stomach and liver symptoms, both of which pointed strongly to perforation, and the further fact, which has not been before stated, except in a report to our local society, that the negro was running in a more or less stooped condition, making positive the direction of the balls inward and upward; and the almost certainty, as it seemed to me that two of the balls had entered the abdominal cavity, to injure the liver and stomach, made the probable diagnosis of injury or perforation of the diaphragm the most probable and easiest explanation of the hiccough. This was all that was claimed, all that could be claimed short of the dissecting table.

The low temperature throughout this case is a positive observation. What it was before the sixth day I am unable to say or find out, for the gentleman who had charge of the case until that time kept no record, but after the sixth day it never exceeded 100½°, notwithstanding a probable perforation of the liver with formation of abscess of the stomach, with bloody vomit and bloody discharges, and notwithstanding a hiccough that lasted six days. The tests were made with a well proven Hicks' thermometer. This man was seen during his illness by Drs. Boyd, Ellis, Holtzclaw, Berlin, Rathwell and Cobleigh, and was afterwards presented to the local society with his full history, for examination, and the same probable diagnosis given, and any one of them are sufficiently familiar with the case to certify to the correctness of the statement given. This explanation is given in full for the benefit of several worthy gentlemen who have seemed particularly interested in the case, and I believe all points are elucidated upon which inquiry has been made. I would not have obtruded it again upon the public otherwise. G. A. BAXTER, M.D.

Chattanooga, Tenn., July 7, 1892.

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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, JULY 23, 1892.

BY-LAW IV OF THE AMERICAN MEDICAL ASSOCIATION.

The Publication of Papers and Reports.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Board of Trustees shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

A BILL FOR THE REGULATION OF EXPERT TESTIMONY.

At a recent session of the Minnesota State Medical Society, DR. B. J. MERRILL, of Stillwater, chairman of the Section on Medical Jurisprudence, directed his arrows at the prevailing abuses of the so-called medical expert. He submitted the subjoined bill for the consideration of the Society, and requested that formal action be taken looking to the correction of prevailing abuses by some form of conservative legislation.

A BILL TO PROVIDE FOR THE APPOINTMENT AND PAYMENT OF EXPERTS.

Be it enacted by the Legislature of the State of Minnesota:

SECTION 1. In all cases pending in the courts of this State, civil and criminal, before or at the time of the trial of said cases, the Judge of said court, when it is made to appear to him that the appointment of experts upon medical, scientific or mechanical questions is desirable, may appoint such experts to examine into the subject matter in controversy, said experts so appointed to be selected in reference to their impartiality between the contending parties; the number of such experts in each case to be fixed by the court.

SEC. 2. In all cases where experts are so appointed, the court is to fix their compensation, and in all criminal cases direct the payment of the same in the same manner as witnesses on the part of the State are paid; in all civil cases the amount so fixed and determined by the court shall be taxed as disbursements by the successful party.

SEC. 3. The court may order such experts to examine into any medical, scientific or mechanical question, and after such examination to testify in court in reference thereto.

SEC. 4. The testimony of said experts so appointed by the court, shall be *prima facie* evidence of the statements and conclusions as to the questions in reference to which said testimony has been given.

SEC. 5. The court may also fix and determine the amount to be allowed such experts for and on account of any medical, scientific or mechanical examination, analysis or test, which the court may deem advisable to have made, and direct the payment thereof, or permit the taxation thereof, as costs as hereinbefore provided.

An eminent jurist, in writing upon the question of evidence, divided unreliable witnesses into three classes, to wit: liars, blank liars and medical experts. Upon reflection we frankly confess our inability to successfully controvert the conclusions of the writer. While under ordinary circumstances we would vigorously object to being in any manner associated with liars, we are unable to disassociate the average expert from the unreliable witness. Until present customs cease both upon the part of the lawyer and the doctor, the allegation of JUDGE STORY must stand unrefuted.

We freely admit that abuses exist and that reform is imperative.

The existing conditions, however, are quite as much the product of the lawyers' shortcomings as those of the doctors or medical expert. It matters not how sincere the expert may be, the attorney is not disposed to permit full and unbiased expression from the lips of the expert. He will only elucidate such data as have a favorable bearing upon his side of the case. The expert is engaged by the attorney and paid by his client. This is wrong. He should be engaged and paid by the Court, and be wholly at liberty to freely express his views. In the direct examination upon either side the questions are skilfully drafted and most misleading when scientifically applied. Fragmentary sentences from standard authors are frequently read to the witness that may have a germane bearing, and the expert compelled to answer the question by yes or no. We are not mitted to explain our position *in extenso*. comes the expert for the defense with a d ent solution of the same question and the result happens. The jury fails to consider pert evidence at all, and not infrequently own interpretations upon questions they know little or nothing of.

In view of existing practices we believe the representatives of the profession of law have been somewhat captious in their very free criticisms of medical experts. It was certainly very proper and politic in the Minnesota Society to remand the consideration of this bill to a committee of five, the majority of whom were lawyers. The proposed bill will in our opinion bear close scrutiny. It is the best draft of a bill upon this question we have examined. This is preëminently an era of medical legislation, and the occasion opportune for work in this direction. The profession will render all the assistance possible, as they will not look upon the commercial side of a question of this character. Coming as it does from Minnesota, it carries with it prestige. The profession of this State possesses the faculty of crystallizing public and professional opinion and bringing about their reforms in a most efficient manner. The bill has not the provision for the appointment of the permanent board of experts that is customary in Europe, but provides for the selection of men by the Judge as occasions may arise. It is not reasonable to fear a monopoly, as the Judges will in all probability select men representatives of the specialties in metropolitan communities, and in communities remote from centers of population they will of necessity select the competent, all around general practitioner. If this bill were to become a law, the court procedure would be quite different from that prevailing in monarchial forms of government. The expert could not shield himself behind his written opinion. Our Constitution, in criminal cases at least, provides that the accused criminal may, either in person or by attorney, directly cross-examine all witnesses. The bill would make the expert accountable to the Judge only, who is the true representative of justice. It will, we believe, subserve the best interests of the public and promote justice.

In civil cases the amount of litigation would be greatly lessened. The number of "railway spines" would lessen by at least 99 per cent. The pathology of spinal injuries would be less ambiguous and contradictory, and more in keeping with common sense. The rights of corporations would be less frequently outraged, and the profession greatly elevated in the estimation of a critical public. The profession will await the action of the committee with interest, and trust they may prove themselves equal to the exigencies of the occasion, and that their motto may be *pro bono publico.*

The one-hundred and twenty-sixth annual meeting of the Medical Society of New Jersey took place at the United States Hotel, Atlantic City, N. J., on Tuesday and Wednesday, June 28 and 29, 1892.

CHOLERA.

The wonderfully increased facilities for rapid transit, and inter-communication between nations makes the presence and spread of cholera in foreign countries at this time, a very serious menace to the people of our own land.

For a number of years we have solaced ourselves with the comfortable belief that modern sanitary science has effectually barricaded cholera from Europe and America. The present condition of famine in Russia, with its consequent train of pestilence, makes the entire population of vast regions easily susceptible to this additional scourge, while the increased immigration from that country to our own affords the health authorities of our States and cities a good and sufficient cause for increased vigilance, and the adoption of necessary quarantine measures.

The many water-ways that furnish scores of towns and cities with their sole supply of water should, so far as possible, be freed from contamination and pollution.

The increase of enteric disease in many localities at this time. is a sufficient reason for investigation as to its cause and consequent removal.

The near approach of the time when hundreds and thousands of people from all parts of the habitable world will visit this country and focus to this city, should force upon the municipal authorities of Chicago, a realization of their responsibility in this direction, and compel a much more vigorous effort than is apparently being put forth, to not only sweep, garnish and put in order every sewer, street and alley but to give the city an overplus of unpolluted water for every household purpose.

In case the germs of cholera should reach this city, the conditions for a spread of the disease to the direst epidemic proportions are singularly favorable.

That it should be necessary, month after month, to boil and filter every pint of water that is used for drinking purposes in a city of more than a million of inhabitants, is a scandal of monumental proportions upon the city government.

This condition of affairs is not only well known at home, but is now thoroughly noised abroad, to the very great detriment of World's Fair interests.

The men of conceptive minds, of enterprise and ability are here and could speedily change most of the disparaging conditions to which we have directed attention. A diversion of thought from a contemplation of unparalleled enterprises, to the more homely one, of preparing to give a cup of pure water to every stranger that visits the city, will soon do the work. We are patiently waiting for a manifestation of the workings of the minds of some men in this direction, and will be glad of an opportunity to tell the world through our pages that the conditions to foster an epidemic of cholera or any other enteric disease do not exist in the World's Fair City.

EMULSIFIED VACCINE LYMPH.

An interesting review of the present status of vaccination has appeared in the *Medical News*, May 14, by the pen of DR. JOHN V. SHOEMAKER. No country has, in recent years, given a more scrupulous attention to the production of lymph than Prussia. DR. SHOEMAKER has been supplied by the Berlin Institute for Animal Vaccination, which is in the charge of DR. PISSIN, State Councillor of Health. This institute was established in 1865, and DR. PISSEN has been a contributor to the literature of small-pox prevention since 1868. The lymph-products of DR. PISSEN have become so favorably known in the country of their origin, that they are exclusively employed as the material for vaccination and re-vaccination in the German army. The lymph is obtained solely by calf-to-calf vaccination. The animals are subjected to rigid examination, and every discoverable source of impurity and contamination is carefully eliminated.

"This lymph is put up in two forms. First, the *pure lymph*, which is a product of constant and unvarying activity, obtained directly from the calf. It should be used in a comparatively fresh condition, that is to say, within from four to six weeks after the date of preparation. This is a beautifully limpid fluid, almost as colorless as water, and is enclosed in hermetically sealed glass tubes. The *emulsified lymph* is prepared from the pure material by a special process. This preparation is a little thicker than the pure lymph, and is slightly turbid. It is equally effective, is far more stable, and retains its power for an indefinite period if the tubes are kept in a cool place. For many years, it is claimed, the results with DR. PISSIN'S lymph have been 100 per cent. of successes in primary vaccinations, and from 80 to 90 per cent. in re-vaccinations. The materials are put up in tubes of different sizes, containing a sufficient quantity for five, ten, or twenty-five vaccinations."

Both forms of the lymph have been used by DR. SHOEMAKER. He says that his success has been uniformly good and he can report that "the claims made for it are borne out by my own experience. In every case the vaccine lesion was perfectly typical and unattended by any unusual local or constitutional phenomena. These tests exemplify not only the efficiency of the preparation, which is, of course, the chief point to be considered, but also incidentally the preservative influence of the sealed tubes—for the fine lymph, which is the least stable, did not reach me until eight weeks after it had been received by the English agent, and it must have been at least a few days old when it first came into his possession. As regards fixity, therefore, it must be regarded as the equal if not the superior of lymph dried upon points. The emulsion that I employed was a fresher sample, being about two weeks old. Both varieties were entirely efficient."

The lymph should be applied as follows: "The skin is cleansed with soap and water at the spot selected for the operation, and wiped quite dry. The extremities of the tube are then broken off, and a sufficient quantity of the lymph blown upon the skin, preferably upon four separate places. Then with a blunt lancet, or darning-needle, previously disinfected by passing through the flame of a spirit-lamp, the lymph is scratched in, care being taken not to abrade the epidermis, any effusion of blood being undesirable. The part should be allowed to dry before the clothing is readjusted, and should not be washed again for a week." Certain of DR. SHOEMAKER'S friends, to whom he gave a share of his lymph, have informed him of successes equal to his own. A single point of criticism is raised in respect of the mode of application, but not of the article itself. It is possible that a waste of the fluid may occur in the act of blowing it from the tube; and there may be some want of success in completely resealing the tubes, when their contents have not all been utilized.

EDITORIAL NOTES.

A CLASSICAL QUOTATION WANTED.—The much abused quotation "who shall decide when the doctors disagree" is floating around again. It circulates far too freely and widely, when we consider that it has fundamentally no relation to the medical profession whatever. The original Latin saying, when first coined and used, we all know, when we reflect upon the subject for a moment, dates from a time when medical men were never called "doctors," and when the only "doctors" were the teachers of the Holy Mother Church, the only doctors then were the gentlemen of the cloth, the clergy. And they were all the time at odds with one another—so we are taught to believe—to such an extent that this adage came into being and has held its place a thousand years, more or less. Only by a strange *contretemps* it has been shifted off from the clergy, and medicine has most unjustly been saddled with it. The old Latin saying had in it a reference to the *disipulus*, meaning the theological student, and affected to pity the distraction of his mind, while the holy teachers were engaged in criticising one another. The disputes of the theologians, in those early days, were marked by an earnestness and rancor that far exceeded anything that can be seen in the medical fraternity—even if it be a question of ethics that is up for decision. For these reasons, we propose to ask any classicist who may read our protestations and who knows the proper Latin text and source of this adage to send them to us and thus help in putting the mischievous quotation where it belongs, with the clergymen. Every time that it seems to be necessary we will quote the original in its original setting. Let us all spurn the "misfit" adage.

THE LOUISIANA MEDICAL SOCIETY SESSION OF 1892.—The June number of the *New Orleans Medical Journal* gives an account of the four days meeting at New Orleans, in April last, this being the thirteenth annual session. The time of the second day was largely devoted to the perfection of a new bill to regulate practice, and to provide for a State

Board of Examiners, which will probably be passed by the next legislature. Important and influential committees were appointed in order to aid, in every legitimate method, the prompt adoption of the important measure. The well-known names of Drs. Miles, Logan, Chaillé, Bemiss, Bickham, Matas, Parkham, and McShane are only a small portion of those engaged in the warfare against irregular medicine. Dr. J. B. Elliot, was made president of the Society a second time, despite his personal protestations against two terms. This was done to retain his services in behalf of the proposed act during the renewal of the campaign before the State legislature. The president is given authority to name the delegates to the American Medical Association. There is room for doubt whether this is, or is not, the best method for choosing representatives. We hold that, unless there are urgent reasons to the contrary, a portion if not the entirety of the delegation would better be elected by any given association before adjournment. The President should, of course, be authorized to fill vacancies. We have known the former course to give rise to undesirable allegations.

The members of this State Society are enlisted in strengthening the membership and basis of representation. It is a most worthy undertaking, and we are pleased to mention that one of the members, Dr. W. G. Owens, was given an especial vote of thanks for his success in causing a large number of new members to unite with the body.

Dr. Lemonnier addressed the Society respecting the duty of the members as to ignorant midwifery. There are more deaths of women and children, he believed, brought about by the midwives than by the murderers. He had succeeded in bringing two of these women before the courts, but they had been discharged because there are no laws for the limitation of that branch of practice. He was requested to frame a bill on that subject. The next meeting of the Society will be held in May, 1893, and at New Orleans.

The editorial columns contain an elaborate estimate of the career and character of the late Dr. T. G. Richardson, one of the ex-presidents of the American Medical Association, and they are adorned by a speaking photogravure likeness of the long-time professor of surgery at Tulane University.

Tonic Lotion for the Skin.—It is claimed for the following compound that it tones the cutaneous circulation and prevents wrinkles: Two ounces of spirits ammonia, the same of tincture of camphor, five ounces of coarse salt, one quart of boiling water. After these are well agitated and cold add six ounces of alcohol. To be shaken before using. This is called a "skin tonic" and is both refreshing and rejuvenating.

Vaseline an Undesirable Lubricator.—In *Memorabilien*, Novotmy has given a warning against the use of this substance to lubricate sounds and other vesical instruments. He has twice found this insoluble material serving as a nidus about which a mass of detritus had accumulated or acting as the rallying point of urinary sediment. A very little of the lubricant, left behind each time that a sound is passed, would in time, in some cases, attain to the proportions of a foreign body of appreciable mass. In one of Novotny's cases the quantity of mixed sediment and lubricant amounted to 150 grains in weight.

Chian Turpentine in Cancer: Nine Years' Experience.—Prof. John Clay, of Birmingham, has given in the *Medical Press* his latest views regarding the use of Chian turpentine in cancer. In his article he publishes the leading characteristics of five cases of differing types which serve to show, as he believes, that his remedy is "a palliative agent of no mean value." These five cases appear to have been of a severe grade and their subsequent condition warranted such reports "no recurrence," "excellent health," "well in every respect" and "very active."

He repeats his former plea to put the patient on the use of the Chian drug before the disease has become advanced and has begun to impress itself on the system at large, or to engage vital parts in the vicinity of the organ at first involved.

But even in such advanced cases, he asserts, the drug is competent to allay pain and diminish blood-loss. He has some uterine cases, treated as long ago as nine years, that are even now living and in a satisfactory state of health.

A Chian turpentine patient, he says, when cured seems to have all the latent germs eradicated; the tendency to recur is not apparent. He believes in using the drug as a preparative to operation. If the knife must be used, he would have the patient take the drug for a period of three weeks or longer. And after the operation is performed he would continue the medication for a twelvemonth. He has seen this plan followed in a number of cases during the last six years, and no return of the disease in these cases has been known to him.

His best results from the Chian drug have been obtained in growths affecting the tongue, face and head. If used early, even when the glands of the neck have become enlarged, "a cure may result." When glandular enlargement has arisen, it is his habit to give the drug in small doses, lest sloughs in the vicinity of the great vessels of the neck may be induced by too active medication. Regarding uterine cancer his experience leads him to say that complications, such as extension of the disease to adjoining structures, arise very seldom when the turpentine is employed, whereas they are almost the rule in other cases.

The purity of the drug is of prime importance, according to the author; and imposition is frequently practiced to the detriment of the sick. The preparations made for Dr. Clay, by the Southalls of Birmingham, have the advantages of purity and careful compounding to suit the different classes of cases. Dr. Clay believes, for instance, that the pills are more efficient than mixtures; but in cases of cancer of the stomach and rectum the pills should not be given.

It will often be necessary to inculcate patience on the part of those taking the medicine, and very speedy results should not be promised. Two or three weeks, perhaps longer, may elapse before any changes in the growth are discernible.

Treatment of Fracture of Clavicle.—With the exception of the femur, there is no bone fracture with which the surgeon meets where a shortening so uniformly results as in the clavicle. The testimony of surgeons from Hippocrates to the present time in that however careful the treatment of this fracture, deformity almost always results. The difficulty does not lie in the reduction of the fracture, for as a rule this is very easily accomplished; the trouble we meet is in retaining the reduction sufficiently long for nature to establish an osseous union, even after the parts are properly adjusted the slightest movement of the head, arm, or even the movements occasioned by respiration are frequently sufficient to displace the fragments again to the position they occupied before their reduction.

I would like to call the attention of the profession to a treatment that has proved successful, that is the use of the bone dowel or peg. After reducing the fracture in the usual manner pierce the clavicle with an awl, let it extend from one broken fragment to the other, then insert the antiseptic bone peg completely. The arm and elbow is now suspended in a sling and the arm is confined to the chest either by a few turns of the bandage or a few broad strips of adhesive plaster.

By this method you will not meet with the difficulties met with in the wire suture advocated by Von Langenbeck and the results will be more perfect.

A. S. Kinnaman, M.D.

1920 Euclid Avenue, Cleveland.

BOOK REVIEWS.

The Medical Register of New York, New Jersey, and Connecticut. 1892-3. Published for the New York Medico-Historical Society. Dr. William T. White, editor.

This is the well-known "Green book," as it is familiarly called in New York; so called from the color of its cloth binding, which has been retained for about thirty years. It contains over three hundred closely printed pages, giving information primarily about medical men and institutions. It also touches lightly on other sub-heads of organized work that is contributory to medicine, such as nursing, pharmacy, publishers, etc. The New York City lists contain 2,435 names, an increase of one hundred names in the year. The editor states that in addition to these, who are accounted "regular," there are 870 who sail under one name or another, and nearly one hundred are known as advertisers. The New York State list has 8,394 names, an increase of about 250, as compared with last year.

The editor earnestly calls the attention of the profession to the growing numbers of people who resort to the public charities. The reports of the dispensaries, for example, show that 442,000 cases were treated at those places, a fact which means either that there is a large increase of pauper sickness or that hosts of persons are treated without charge, who would otherwise employ a physician. There were 6,500 cases treated in the various hospitals.

Regional Anatomy in its Relation to Medicine and Surgery. By George McClellan, M.D. Vol. ii, 4to, pp. 414. Philadelphia: J. P. Lippincott & Co. 1892.

In our notice of the first volume of this recent addition to our already long list of works on anatomy, we expressed our high appreciation of this work, and now that the concluding volume has made its appearance, we can only reaffirm what we then said of the highly conscientious style of the author, the excellence of the illustrations, and the typographical merit of the book as a whole.

It is scarcely too much to say that the present high standing of medicine and surgery as a science is due chiefly to more correct anatomical knowledge, and when we examine the records of the past we find that in every period of the world's history where the study of anatomy languished, medicine and surgery showed little advance and often actual decay, and we sometimes fear that our progressive and pushing age is neglecting anatomy, that foundation of all solid progress, for transcendental medical and surgical therapeutics. It was the teaching of anatomy that made the ancient Greek medical writings and the Alexandrian school immortal, and the impetus given to medical science in the sixteenth century was solely due to the discoveries made in human and comparative anatomy.

But regional anatomy, such as Dr. McClellan sets forth, is the connecting link between the theoretical and practical. It describes the members as they are found, in association. Regional anatomy is thus of much higher value to the practitioner, than the description of separate parts, indeed one must recall with a smile how Alerneon, the first descriptive anatomist, in mentioning what we now know as the Eustachian tube, was led into the belief that goats respired through their ears, and it was given to Aristotle to demonstrate that this tube had no particular connection with the respiratory function. The study of particular parts, therefore, unless supplemented by their collective study, may lead to serious error.

The volume now on our table, devotes eighty-one pages to the region of the abdomen, and the remainder of the four hundred pages in proper proportion to the inguinal region; the region of the pelvis, the region of the perineum; the region of the back; the lumbar region; the gluteal region; the region of the hip; the region of the thigh; the region of the popliteal space; the region of the leg and the region of the ankle and the foot.

The illustrations are excellent color reproductions from original color sketches from actual dissections by the author, and the letter press is large, handsomely printed on heavy paper, and the publishers may congratulate themselves that they have done their part in furnishing a welcome and creditable addition to American medical literature. J. B. H.

NECROLOGY.

Prof. Theodor Meynert of Vienna, has died, and left a notable vacancy in the University faculty of that capital. He was an indefatigable worker in psychiatry, a branch of medicine, which before his day existed only as a name without meaning—"a chaos with no hope of order being restored." This was the expression of Nothnagel, while Zuckerkandl said that the medical world owes it to the dead professor that he opened up a new epoch, since it was Meynert who paved the way to a precise expression of symptoms for localization. His writings had been numerous and varied, but his anatomy of the brain should be sufficient to immortalize his name. Every department in the University suspended the regular routine long enough to pass a tribute, fuller or briefer, to the memory of Meynert, and when Nothnagel addressed his class, all the students arose and remained standing while the professor pronounced his eulogium upon the departed colleague.

American Pediatric Association.—Officers elected for the ensuing year: President, Dr. Blockader of Montreal; First Vice-President, Dr. Keating; Second Vice-President, Dr. Earle of Chicago; Secretary, Dr. Samuel Adams of Washington; Treasurer, Dr. Townsend of Boston; Recorder, Dr. Watson of New Jersey; New Member of Council, Dr. Rotch of Boston. New members elected were: Dr. J. P. Crozer Griffith of Philadelphia, and Dr. T. F. Sherman of Boston.

The Maine Medical Association met in Portland on June 9. The following officers were elected: President, Dr. Alfred Mitchell of Brunswick; Secretary, Dr. William Cammett, of Portland.

Officers of Tennessee State Medical Society.—During the session of this State Society, held in Knoxville, the following officers were elected for the ensuing term: Dr. C. W. Beaumont, of Clarksville, President; Drs. A. D. Sruggs, W. K. Sheddan, of Williamsport, and W. A. D. Coop, of Dyersburg, Vice Presidents respectively for East, Middle and West Tennessee; Dr. D. S. Nelson, of Chattanooga, Secretary, and Dr. Walker, Treasurer.

At the annual meeting of the Washington, D. C., Medical Association, the following officers were elected: N. S. Lincoln, President; C. H. A. Kleinschmidt, First Vice-President; H. L. E. Johnson, Second Vice-President. James Dudley was re-elected Secretary, and Samuel S. Adams, Treasurer.

MISCELLANY.

American Orthopedic Association.—The sixth annual meeting of this Association will be held in Room 39, at the New York Academy of Medicine September 20, 21 and 22, 1892. The program is as follows:

The Association will be called to order daily at 9 a.m. There will be an afternoon session at 2 o'clock.

At noon on Tuesday and Thursday the Association will go into executive session for the transaction of business.

On Tuesday evening, at 8 o'clock, Dr. Lewis A. Sayre will receive the members and guests of the Association at his house, No. 285 Fifth Avenue.

At 8 o'clock on Wednesday evening the annual dinner will be held in the banquet-room of the Academy of Medicine. The charge will be five dollars per plate, and members are requested to notify the Treasurer at the earliest possible day of their intention to participate, and accompany the notification with a check for the number of plates desired, with names of guests.

First Day—Tuesday:

1. The President's Address, Dr. Benj. Lee, Philadelphia.

2. Report of a Case of Spontaneous Dislocation of the Hip Joint, Dr. B. E. McKenzie, Toronto.

3. Adduction following Fracture of the Neck of the Thigh Bone, Dr. H. Hodgen, St. Louis.

4. Osteitis Deformans, with a Report of Two Cases, Dr. Henry Ling Taylor, New York.

5. Lateral Dislocation at the Knee Joint due to Local Disease, or Paralysis, with especial reference to Treatment, Dr. T. Halsted Myers, New York.

6. Plaster of Paris Orthopedics, Dr. A. J. Steele, St. Louis.

7. The Orthopedic Treatment of Infantile Spinal Paralysis, Dr. John Ridlon, Chicago.

8. A Report of Two Years' Operative Work in the Hospital for the Ruptured and Crippled, Dr. V. P. Gibney, New York.

9. Lateral Curvature, Dr. E. H. Bradford, Boston.

10. The Classification of Hip Disease, Dr. R. W. Lovett, Boston.

11. A Study of some of the Problems in the Mechanical Treatment of Hip Joint Disease, Dr. Newton M. Shaffer, New York.

12. Experiments Demonstrating the Etiology of the various Deformities in Hip Joint Disease, Dr. A. M. Phelps, New York.

13. Some Remarks on the Etiology of Club-Foot, Dr. Samuel Ketch, New York.

Discussion to be opened by Dr. J. K. Young, of Philadelphia.

14. At what Age shall the first Treatment of Congenital Club-Foot be Instituted? Dr. H. Augustus Wilson, Philadelphia.

Discussion to be opened by Dr. C. C. Foster, of Cambridge.

Second Day—Wednesday:

The following papers will be discussed together:

15. The Non-Operative Treatment of Congenital Club-Foot, Dr. A. B. Judson, New York.

16. The Non-Operative Treatment of Club-Foot in Young Infants, Dr. R. W. Lovett, Boston.

17. Manual Replacement in the Treatment of Club-Foot, Dr. Ap Morgan Vance, Louisville.

18. The Treatment of Club-Foot by Continuous Leverage, Dr. Henry Ling Taylor, New York.

19. The Place of Traction in the Treatment of Club-Foot, Dr. Newton M. Shaffer, New York.

20. The Use of the Wrench in the Treatment of Club-Foot, Mr. Robert Jones, Liverpool.

Discussion to be opened by Dr. A. M. Phelps, of New York, and Dr. Roswell Park, of Buffalo.

The following papers will be discussed together:

21. The Operative Treatment of Club-Foot, Dr. DeForest Willard, Philadelphia.

22. Analysis of Bone Operations in Club-Foot, especially Enucleation of the Astragalus, Dr. V. P. Gibney, New York.

22. Treatment of Resistant Club-Foot, Dr. E. H. Bradford, Boston.

Discussion to be opened by Drs. L. A. Sayre and J. B. Bryant, of New York.

Third Day—Thursday:

24. An Easy Way to hold the Operated-on Club-Foot in the corrected Position while the Plaster of Paris Splint Sets, Dr. H. M. Sherman, San Francisco.

25. Means for the Prevention of Relapse in the Treatment of Club-Foot, Dr. B. E. McKenzie, Toronto.

26. Necessity for Mechanical Treatment after Operations for Club-Foot, Dr. W. R. Townsend, New York.

27. A Case of Club-Foot with Rare Complications, Dr. A. J. Steele, St. Louis.

28. Paper on Club-Foot; title not announced, Dr T. Halsted Myers, New York.

29. Paper on Pott's Disease; title not announced, Dr. R. H. Sayre, New York.

30. Paper; title not announced, Dr. H. L. Burrell, Boston.

31. Paper; title not announced, Dr. J. C. Schapps, Brooklyn.

President—Benjamin Lee, M.D.

Vice-Presidents—R. H. Sayre, M.D.; H. L. Taylor, M.D.

Corresponding Secretary—Royal Whitman, M.D.

Secretary and Treasurer—John Ridlon, M.D., 34 Washington St., Chicago.

Committee on Membership—E. H. Bradford, M.D.; A. J. Gillette, M.D.; Samuel Ketch, M.D.; DeForest Willard, M.D.; L. E. Weigel, M.D.

Vermont State Medical Society.—Preliminary program of the seventy-ninth annual meeting of the Vermont State Medical Society, held in Montpelier, Oct. 13 and 14.

Papers (partial list).

1. The President's Annual Address, C. S. Caverly, Rutland.

2. Placenta Prævia, D. G. Kemp, Montpelier. Discussion opened by C. C. Perry, West Rutland.

3. An Analysis of Dosimetry, C. W. Strobell, Rutland. Discussion opened by W. H. Vincent, Orwell.

4. Cholera Infantum, A. E. Moody, Isle La Motte. Discussion opened by Geo. Davenport, E. Randolph.

5. Uric Acid and Urea, Analysis and Significance of, Geo. B. Nichols, Barre. Discussion opened by C. W. Peck, Brandon.

6. The Influenza as observed by me in the epidemic of 1891-92, S. T. Brooks, St. Johnsbury. Discussion opened by M. R. Crain, Rutland.

7. Treatment of Minor Injuries to Workmen, C. B. Ross, W. Rutland. Discussion opened by C. E. Chandler, Montpelier.

8. Some of the Medical Delusions of the past and present, Edw. R. Campbell, Bellows Falls. Discussion opened by H. A. Crandall, Burlington.

9. Injuries to the Intestinal Canal, and their various modes of treatment, E. M. Pond, Rutland. Discussion opened by J. N. Jenne, St. Albans.

10. McBurney's operation for radical cure of Hernia, with presentation of a case, Wm. F. Hazelton, Springfield. Discussion opened by H. Janes, Waterbury.

11. Neurasthenia, A. J. Willard, Burlington. Discussion opened by H. R. Wilder, Swanton.

12. Diphtheria—Cause, Prevention and Treatment, F. R. Stoddard, Shelburne. Discussion opened by C. F. Branch, Newport.

13. The Insane Diathesis, J. M. Clarke, Burlington. Discussion opened by D. D. Grout, Waterbury.

14. The use of the Curette in Uterine Surgery, Albert Vander Veer, Albany, N. Y. Discussion opened by L. M. Bingham, Burlington.

15. Paper (Title to be announced) B. J. Andrews, Burlington.

16. Obituary of S. S. Clark, M.D., Geo. Dunsmore, St. Albans.

17. Obituary of Joseph Draper, M.D., H. D. Holton, Brattleboro.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from July 8, 1892, to July 15, 1892.

Col. Charles Page, Asst. Surgeon-General U. S. A., is granted leave of absence for one month, with permission to apply for an extension of one month.

Major J. V. D. Middleton, Surgeon U. S. A., will take charge of the office, and perform the duties of the Medical Director, Dept. of the East, in addition to his other duties, during the absence on leave of Col. Page, Medical Director.

Major John O. Skinner, Surgeon U. S. A., granted leave of absence for four months on account of sickness, with permission to leave the Dept. of Texas.

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AMERICAN MEDICAL ASSOCIATION.

SECTION ON PRACTICE OF MEDICINE.

(*Continued from page 105.*)

TRANSMISSION AND BEHAVIOR OF TYPHOID POISON AS OBSERVED IN COUNTRY PRACTICE.

BY LEWIS N. DAVIS, M.D.,
OF FARMLAND, INDIANA.

By a vast majority of the observers who would seem best calculated to know the facts, typhoid fever is now thought to be due to the invasion of the blood by a specific microörganism, known as the germ of Eberth, or the bacillus typhosus. The same observers believe that water is the principal, in fact, almost the only, medium that operates in the transmission of this infectious germ from its focus development, outside of the human body, to the subject of enteric fever. The germs or their spores are said to be eliminated from the typhoid patient, with the alvine discharges in a totally passive state. They increase rapidly in number and soon develop virulence and activity, under the favorable conditions afforded by filth, heat and moisture.

Water is supposed to be a favorable habitat for typhoid germs[1]. These microbes may find ready access to the surface water by a careless disposition of the stools of typhoid patients; thence they reach the wells and other sources of water supply by surface drainage, by active filtration through porous soils and leaks in water mains. Typhoid germs are transferred to the human system by persons drinking the water thus contaminated. If sufficiently susceptible the system will yield to the infectious material and typhoid fever will follow.

Medical history is replete with apparently undeniable proofs of this theory of transmission and behavior of typhoid poison. Such notable instances as the epidemics of Caterham[2] and Redhill, Eng.; Bordeaux[3], France, Wilkesbarre[4] and Plymouth[5], Pa., and that of Cincinnati, Ohio, seem indeed to offer unanswerable evidence in favor of the possibility of water transmission of typhoid poison. Therefore, the theory of water contamination as a cause of typhoid fever has rapidly grown in the favor of the physicians in the last few years.

Today the unanimity of medical thought on this subject may be conveyed by such declarations as that of Prof. Vaughan who says[6], "There are 350,000 to 400,000 cases of typhoid fever in the United States yearly. Medical men believe these are almost wholly due to impure drinking water." Some observers place the number of infections from impure drinking water as high as 98 per cent[7]. Upon this subject I believe the medical profession occupies an extreme, if not an unwarrantable position. The pythogenic theory of Murchison and the contagious theory of Budd are alike rejected.

Clinical observations in the country do not seem to corroborate these widely prevalent views, relative to water transmission of typhoid infection.

If anything can be determined by the behavior of typhoid poison—whatever that may be—as manifested by its influence on members of isolated families, it is: 1. That water is not commonly the medium which conveys the infection to the human system. 2. That the poison is ordinarily conveyed to the system that becomes infected by the atmosphere in the immediate neighborhood of the typhoid patient, or by the atmosphere immediately surrounding the focus of infection, if the focus of infection be outside of the human body. 3. That typhoid fever is practically contagious. 4. That the poison is probably infectious from the time it escapes from the body of the typhoid patient.

The rural section to which my practice has been confined for a period of twenty years is the most elevated portion of the State of Indiana, being about 1,285 feet above sea-level. It comprises an area eight or ten miles square, which consists of a narrow table-land and flat water sheds, lying between the Mississinewa and White rivers. These rivers afford running water the year round, and are only about eight or ten miles from each other at the point in question. The gentle hills and sloping valleys, together with the streams named, provide ample drainage for every district of the country. The soil consists of glacial deposit, and is, as a rule, of a very heavy, non-porous, compact character. It is composed largely of yellow clay, mixed with a liberal supply of humus, and along the streams with sand. Beneath this drift, at a depth of forty to sixty feet is everywhere found a solid bed of lime-stone.

The drinking water is obtained from wells which are usually about twenty feet in depth. The first ten feet traversed in sinking a well are through the heavy yellow clay just spoken of; thence to a strata of sand where an abundance of water is obtained, is through a very dense, sticky blue clay. Both kinds of these clays are almost impervious to water, so that percolation of surface water into the wells might be regarded as practically *nil.* It can only be in the fewest possible instances, from wanton carelessness, that surface water finds entrance directly into a well through slight depressions or furrows in the ground. The wells are usually thoroughly protected against surface water by embankments, and the whole arable country is well drained with a perfect system of tiling.

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[1] Gaffky, Jour. Am. Med. Ass'n, p. 275, Vol. xviii.

[2] Wood's Handbook of Practice.

[3] Picket—Gazette Hebdomadaire des Sciences Medicales, De. Bordeaux.

[4] Dr. Taylor—Lehigh Valley Medical Magazine, May, 1890.

[5] Drs. Rushford and Cameron—Medical News, Nov., 1887.

[6] The examination of drinking water with special reference to its relation to typhoid fever. Jan. 14, 1890.

[7] Dr. Thad. A. Reamy. Lecture before the Teachers' Association. Cin'ti. March 13, 1872.

The farmers are well-to-do, and are usually tidy about their premises. As respects their sanitary surroundings, they are quite abreast with the average of their class, in the best agricultural sections of any country.

But a little more than two generations have passed since the white man first broke the soil. The history of early settlers affords but very few well authenticated cases of typhoid fever. The great scourge of the Hoosier, from the time the first forest trees were felled until the year 1879, was malarial poison. Malaria in its multiferous forms, prevailed from August till December. For the past twelve years, from some unknown cause, malarial fevers have been superseded by typhoid. Typhoid fever now constitutes the prevalent autumnal disease; it prevails in the form of family and neighborhood epidemics and not infrequently extends through the entire winter.

On the 12th day of December, 1886, I was called to see Mrs. B.,[8] aged 46 years.

About a month before this time Mrs. B. had assisted in nursing a neighbor woman who died with typhoid fever. The sick neighbor was situated one mile distant from where Mrs. B. lived. Mrs. B.'s case also proved to be one of typhoid fever. She had two profuse hæmorrhages from the bowels during the continuance of her sickness, and passed many weeks in a very critical condition, but finally recovered.

The Bales family, to which Mrs. B. belongs, consists of the parents and six children. Their residence is a commodious two-story frame building, which has been built three years. The well was dug and the out-buildings constructed at the same time the house was built.

Prior to the attack of Mrs. B., there had been no sickness in the family, save a case of "summer complaint," since the house had been occupied. The fecal discharges of the patient were disinfected with nitric acid or boiling water, carried a distance from the house and buried in the earth. The body and bed linen were changed every alternate day, and strict attention was paid to the cleanliness of the patient, as well as the general surroundings of the sick chamber. However, during the course of Mrs. B.'s case the weather was quite cold, and in order to meet the somewhat fanciful desires of the patient, the house, at times, was kept extremely close and warm. The children occupied an adjoining room to that of their mother during the sickness of the latter. With all the precautionary means, precisely twenty-four days after their mother took sick, five of the children aged from 8 to 18 years began to manifest symptoms of the disease.

The subsequent three weeks gave full development to all the phases of the typical and grave typhoid fever in each of the five children. All recovered.

Thus the epidemic which had been produced by the imported poison, ended with the infection of the five children.

There were but very few, and only transient visitors in the Bales house during the prevalence of their family epidemic. The nursing was in charge of Mr. Bales and his eldest daughter—two of the most rugged members of the family—both of whom escaped the disease entirely.

The following is a brief history of an interesting neighborhood epidemic in which the first case made its appearance in a family by the name of Adams:

The Adams family consists of six persons: Mrs. Adams, aged 73 years, her son and his wife, and three small grandchildren.

The family has lived on the place now occupied a part of three generations, covering a period of fifty-two years.

The water is supplied by a well which has been in constant use by the family for forty years.

One case of typhoid fever is said to have occurred on the Adams farm within the fifty-two years of the family occupancy, the date of this case being in September, 1847—almost forty-five years ago.

On the 14th day of October, 1891, the senior Mrs. Adams visited a married daughter, seven miles distant. There were five cases of typhoid fever, in various stages of progress, in the family visited.

Mrs. Adams returned to her home in a short time, and after several days of complaining, she took her bed on the 6th of the following November. She soon became stupid, semi-conscious and comparatively helpless.

As she was visited only a few times by a physician, in the early part of her sickness, before the development of the more characteristic symptoms, the diagnosis of the case was left in some doubt. Suffice it to say, that Mrs. A.'s case was attended by many symptoms of typhoid fever, including a very profuse and troublesome diarrhœa. Owing to her helpless condition, the nurses placed pads under the hips of the patient, and the bowels were evacuated *in situ*.

As the old lady was quite a care in her last sickness, a goodly number of neighbors and relatives lent a helping hand in nursing her.

Among those actively engaged in attending the sick woman were five couples—men and women—belonging to as many distinct families, but including Mr. J. A. and wife of the Adams family. The remaining four couples, or families, live respectively one-quarter, one-half, three-quarters and four miles distant from the Adams house.

All of these ten persons[9] who participated in nursing Mrs. A. were of about middle age, and enjoyed an average degree of health.

The interior of the Adams residence is very uninviting. It consists of one large, and two or three smaller rooms, all of which are dark and poorly ventilated. The sides of the rooms are covered with old wall-paper, which is hanging loose in many places.

The nurses, callers and the sick, promiscuously occupy the larger room together much of the time, heat being generated by a huge wood-stove, which is in close proximity to the sick-bed.

Mrs. Adams was buried on the twenty-third day after taking her bed, at which time there were but half of the nurses able to attend the funeral; and within thirty-three days after Mrs. A. senior took sick, all of the ten nurses had typhoid fever.

With but two or three exceptions, the cases presented the roseolous rash, had epistaxis, and all of the leading features of grave typhoid. They all recovered but Mr J. A. of the Adams family, who died on the thirty-fifth day of his illness, with hæmorrhage from the bowels.

It is supposed that each of the three grandchildren in the Adams family had a slight attack of typhoid fever, as they were very much indisposed during the sickness of their parents.

In addition to the nurses already mentioned, there were a few transient callers at the Adams house during the course of the first case. Among the number was Miss M., aged 18 years, who was induced to remain at Mrs. A.'s wake on the night of November 28.

Twenty days later Miss M. took typhoid fever.[10] She had the roseolous rash, and in all respects a typical attack of typhoid, from which she recovered in about thirty days.

She ate nothing during the night when at the wake, and partook of no liquids save a few swallows of water just before her departure in the morning.

This, the fourteenth case, concludes the number of infections that occurred at the Adams house during the sickness and before the burial of Mrs. Adams, by whom the poison was undoubtedly transported thither from a distance of seven miles.

There were three other infections in the Adams house after the death of the first case, as follows: Mr. and Mrs. Mills went to nurse J. A. and wife, on the Adams farm, in the early part of December. Both took typhoid fever twenty-one days thereafter; both recovered.

Mr. W. R., aged 24 years, was then hired to go to the Adams house and wait upon J. A. and family. He began duty on the 28th of December, 1891. Twenty-one days after he entered the infected locality the first symptoms made their appearance, and soon he was confined to his bed with a very severe case of enteric fever. He recovered in about six weeks.

When taken sick, Mr. R. was lodged in the farm residence of Mr. Hammers, about one mile distant from the Adams place. Good nursing was secured throughout the course of the case.

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[8] See Jour. Am. Med. Ass'n, vol. x, p. 483.

[9] They occasionally took meals and drank water at the Adams house.

[10] Miss M. lives one mile from the Adams house.

The patient's stools, which were very frequent, were carefully disinfected with three or four times their bulk of boiling water, carried 200 yards from the house and buried in the ground.[11]

The body of the patient was thoroughly sponged with dilute alcohol two or three times daily, and the body and bed-linen kept scrupulously clean. The desired ventilation could not be always attained in the sick-chamber, however, on account of the prevailing cold weather, which frequently necessitated closing both doors and windows.

The Hammers family consists of Mr. H. and wife, aged 75 and 72 years respectively, their daughter and three grandchildren.

Mr. H. was the first settler on his place, and has occupied it since 1837. In all respects the home is a model one for taste and cleanliness, from the interior of the residence to the farthest limits of the farm. Prior to the present outbreak, there has never been a death or any bad sickness on the Hammers farm.

The well is situated on high open ground, several feet from any building, is 20 feet deep, and has supplied the family with water for twenty-two years.

In from twenty to thirty days after the reception of Mr. R. into the Hammers residence, the three grandchildren were attacked with typhoid fever, and on the 28th day of March, or two months after the entrance of the first case into the family, Mrs. H. took the fever, and died twenty-one days later.

The origin, course and decline of many similar limited country epidemics might be detailed, but without presenting any especial features not contained in those already given. I have intentionally refrained from reporting any local outbreak of typhoid fever in which it was not possible to trace the origin of the first case to some distinctly infected source—my purpose being to assist with this means, in making it clear that the infection did not exist on the premises where the epidemic occurred, prior to the development of the case, which is here regarded as initiating and spreading the epidemic.

It is beyond the limits of the subject to combat the theory of water transmission of typhoid fever, and far beyond the limits of my ability to do so with much hope of success.

But if able to exhibit any inconsistencies in the theory of water contamination as the *chief* cause operating in the spread of typhoid fever, even in a single locality, much will have been accomplished in favor of the theory of atmospheric transmission of the poison.

The inconsistency of the view which holds that water is the chief carrier of the *materies morbi* of typhoid fever becomes apparent when applied to the behavior of the poison, after it has been transported from an infected to a previously healthy locality, as in the case of Mrs. B., who became infected on her neighbor's premises. She carried the infecting principle a distance of one mile, into her own home, where there was not the slightest reason to believe that it had ever existed before. Twenty-four days after the poison had gained a foothold in this virgin soil at the Bales home, it was capable of striking down the five children.

Could it be possible that the infectious material that might have been contained in the discharges from Mrs. B.'s bowels, had found its way into the water of the recently dug well, thence into the system of the five children, within the lapse of twenty-four days?

Such a view certainly cannot be made to appear tenable, when it is remembered that the discharges in Mrs. B.'s case were very carefully dealt with.

The same incongruity of thought will occur, if the theory of water pollution be offered as an explanation of the spread of typhoid fever in the Adams epidemic.

Here the typhoid material was undoubtedly conveyed by the first subject from a notoriously affected locality, a distance of seven miles, to a farm that had not known a case of typhoid fever for forty-five years. Yet, within twenty-two days after the transported poison began to manifest itself in this newly infected locality, it had five more victims, a little later ten, fourteen, then seventeen.

Can it be said that this well from which the family had been supplied with water for forty years without any untoward developments, had become charged with typhoid poison in the space of twenty-two days? Impossible! Did Miss M., who staid at the Adams wake on the night of November 28, swallow the typhoid material in a few sips of water? I do not believe so.

Again, in the Hammers family, where the poison was transported by Mr. R. from the Adams focus of infection, one mile distant, to a farm that had been noted for the health of its inhabitants for fifty-five years, the premises suddenly becomes a hot-bed for typhoid fever. Could the water supply from which the family had been furnished for twenty-two years be responsible? Was the water answerable for the four cases of typhoid fever that followed in from one to two months?

It is not alone the short time required for the transported poison to assume activity, in a previously healthy locality, that renders the theory of water contamination an improbable cause in the spread of typhoid fever. It is also improbable in the epidemics here cited, as well as all other epidemics of typhoid in this locality, owing to the character of the soil, as previously set forth.

Our wells certainly contain little else than unmixed "ground water," therefore the water must have been subjected to prolonged filtration through stratas of sand and gravel before reaching the wells, by which process, according to high authorities,[12] it is freed from any pathogenic microbes it might have contained.

Is it not possible that a relationship between malarial and typhoid fevers may yet be found in the fact that the latter now prevails in many localities at the expense of the former?

Typhoid fever is undoubtedly contagious by mediate contact; and atmospheric contamination offers the only plausible explanation of the spread of the disease in each of the epidemics just given.

The contagium, which certainly escapes with the exhalations from the body of the patient, as well as with the dejections from the bowels, must be active at the moment it is liberated from the typhoid subject, because there is no difference in the length of the stage of incubation in the first and second set of cases infected by a transported poison.

The infected atmosphere may reach every apartment in an ordinary farm dwelling which contains a typhoid patient, when the conditions are favorable

The conditions are favorable in the winter time, when it is impossible to secure perfect ventilation in country houses, on account of cold weather. The conditions are still more favorable when, conjoined with improper ventilation, there is little attention paid to the cleanliness of the patient and his surroundings.

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[11] The stools of the patients on the Adams place were neither disinfected nor buried, but carried quite a distance, down a slope, from the well and house.

[12] Bertschringer, Gazette Médicale de Nantes, July, 1890.

The country population experiences but few epidemics of typhoid fever in the early autumn, when the doors and windows can be thrown open, and when the application of water can be advocated with the perfect approval of both the patient and the nurse. Like the most of contagious diseases, the infecting material of typhoid may unquestionably be inhaled with the atmosphere which disseminates it.[13] Such accords with our experience in country practice; such are the views of our patrons, and with each passing year we find it more difficult to secure nurses who are willing to engage in the care of typhoid patients.

Discussion.

Dr. Chapin reported that in 1864 he had seen several cases similar to those reported in the paper.

Dr. J. H. Musser, of Philadelphia, thought that before any conclusion can be drawn, the relations of the first case, so far as the infection of drinking-water is concerned, should be worked out. He regretted that, in connection with the report of the Adams family, no record had been given of the disposition of the stools. In this connection, he said, the epidemic of Plymouth, Pa., well known to all, was of interest. It was there shown that the cases arose from one case of typhoid living at the head of the stream which supplied drinking-water to the communities afterward afflicted.

Dr. Davis, in reply, stated that the stools of the Adams family were not disinfected, but were thrown out upon the ground at a distance. He had failed to mention this fact because he did not think that the poison could reach the well in the twenty-four days which preceded the outbreak of the second case.

A paper was then read entitled

NON-VALVULAR HEART MURMURS.

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By non-valvular heart murmurs I mean heart murmurs that are produced without structural change in valves. Such murmurs are common. They often cannot be distinguished from those that are produced by valvular deformities. The physical signs which accompany valvular lesions enable the diagnostician to locate the morbid process and to determine the character of interference with the circulation which it produces, but does not make it possible to decide on the pathological character of the lesion.

I call attention to the following cases to emphasize the fact that not unfrequently the murmur of a non-valvular lesion is the same in character and location as a valvular one, and that it may be accompanied by the same changes in the size and shape of the heart and other organs.

A man about 45 years old, entered Mercy Hospital suffering with distressing dyspnœa. He coughed little. He was moderately œdematous about his feet. He complained of no pain. His heart was enlarged to the left moderately. Its area of dulness extended about two-thirds of an inch to the left of the nipple line and to the centre of the sternum. The apex beat was strong and easily discernible, though the chest wall was thick. It was moderately diffused and not quite regular. There was throbbing just beneath the sternum of moderate force. No thrills could be felt over the heart. The precordia was not prominent. A systolic murmur was audible all over the heart, but was loudest and clearest at the apex and lowest and most obscure over the aorta. The patient's liver was about one inch broader than was normal. He had no abnormal temperature while he was at the hospital. His urine was normal in amount, slightly cloudy, of a dull straw color and a specific gravity of 1028. It contained considerable albumen. When the latter was coagulated by heat and permitted to settle thoroughly it constituted about one-sixth of the bulk of the urine tested. Granular casts, a few granular epithelial cells and some amorphous granular matter was found in the urine's sediment.

The patient began to be dyspnœic about a week before he entered the hospital. His feet became œdematous at the same time. He had been slightly short-breathed for months. A year prior to this last illness he suffered with acute articular rheumatism. He had been a laborer and was accustomed to use alcoholics freely.

The urine indicated a chronic nephritis. The enlargement of the liver, evident engorgement of the lungs, and dilatation of both ventricles with probably (as the force of the apex beat indicated) some hypertrophy, and a cardiac murmur most intense at the apex, pointed to a mitral valve lesion. The former rheumatism afforded a cause for endocarditis. The shortness of breath which the patient experienced during the year prior to his last illness was supposed to be of cardiac origin. It was thought that the nephritis might have grown out of a passive hyperæmia of the kidneys.

A few days after he entered the hospital a pain of considerable intensity and persistence suddenly developed in his right forearm. The arm also rapidly became œdematous. There was tenderness about the painful point. This new lesion was evidently due to an embolus. In a week the arm was normal in size and all pain had disappeared. He gradually improved so that he could lie down to sleep. The œdema of his feet lessened. Again he was taken worse and became rapidly very dyspnœic. His breathing grew shorter and more labored as his lungs filled with an œdematous exudate until it ceased.

On post-morten examination his kidneys were found enlarged and presenting the usual aspect of parenchymatous nephritis; the liver was slightly enlarged from congestion. His lungs were œdematous and a small amount of serum was found in the left pleural cavity; the heart was enlarged and soft. The walls of the ventricles were normal in thickness. No lesion or deformity of the valves was discoverable,but a fibrinous clot whose largest mass was a half inch in thickness, was intimately intertwined amongst the chordæ tendinæ of the mitral valve. This was evidently not a new clot for it was firmly adherent to the heart's wall at several points. It was tough and firm. The mitral orifice was not abnormally large. The murmur must have been due to the interference which this clot presented to the closing of the valves and a bit of it formed the embolus which caused his arm to swell. The renal disease was plainly the primary one. The blood-state which nephritis produced predisposed to the clotting of the blood in the dilated heart. The interference with the circulation which the clot caused was precisely that which a contraction of the mitral valves by scar-tissue or other inflammatory change might produce, therefore the physical signs which resulted were the same.

Another case of cardiac murmur due to a heart thrombus, I observed develop in a similar case of nephritis. A young man of thirty-five had nephritis for at least two months before a physician was consulted. When seen by me he was quite œdematous,suffered much from nausea and occasionally from dyspnœa. A severe headache tormented him at night. He had supposed the œdema of his feet was a rheumatic swelling of them. He made only about one half the normal quantity of urine. It was turbid and contained an abundant sediment. In the latter granular and epithelial casts were numerous. There was much amorphous granular matter, a few granular epithelial cells and oil droplets. The urine was strongly albuminous. During the two weeks that followed, the patient grew gradually weaker with, from day to day, varying degrees of comfort and discomfort. He then kept his bed continuously although the œdema had nearly disappeared and the nausea and vomiting had wholly. His urine had increased so that it was little less than normal. While for the most part free from pain or suffering, he felt his weakness greatly. Often at night he felt anxious for air and demanded that the windows be opened,thoughhis breathing was not increased in frequency and there was no evidence of obstruction to the bronchial tubes. His heart was easily excited from the beginning of his illness. Usually his pulse varied from 80 to 90 beats per minute, but slight exertion made it quicker. It was rather small and soft. His skin had the sallow anæmic hue which characterizes chronic parenchymatous nephritis.

About two weeks before his death I found at my morning visit that there was audible over the heart a double systolic beat. The two systolic sounds were perfectly distinct and exactly alike in character. His pulse was then 130 per minute. He felt extremely weak and momentarily faint. The systolic reduplication persisted during the half hour that I sat by him. I returned to him about three hours later and then found the double systole gone but a plain murmur audible along the lower right border of the sternum and over the lower end of the bone. It was loudest and clearest in the second intercostal space just to the left of the sternum. It was less plainly audible over the aorta than at the lower end of the sternum and was inaudible at the apex. The murmur was soft, low and systolic in time. Over the pulmonary artery the second sound was wanting. The heart had not changed in size or shape. For a week its area of dulness had extended from the left nipple a trifle to the right of the sternum. The apex beat was scarcely discernible and could not be plainly felt. There was no substernal throbbing. The cardiac murmur which had thus developed persisted to the patient's death. It seemed to me plainly a case of cardiac thrombosis in the right ventricle and interference with the action of the tricuspid valves upon that side.

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[13] Experiments of Sicard. See Jour. Am. Med. Association, Editorial, Vol. xviii, p. 467.

The patient died 16 days after the cardiac murmur developed. An autopsy displayed kidneys with the characteristic appearances of the patient's disease. The heart was moderately enlarged, a little soft and of normal color. The interior of the left ventricle and auricle was normal. In the right ventricle, adherent to its walls, intertwined with the chordæ tendinæ and muscular papillæ was a large clot of a dull white color and very firm consistence. In the ventricle it was spread out and much divided, but was concentrated into a large, ropy mass a third of an inch in diameter and three inches long, which extended into the pulmonary artery.

These cases are especially interesting as illustrations of the length of time clots may exist in the heart, though not perfectly organized, and the possibility of cardiac murmurs being produced by them. The thrombi formed in these two cases resembled those that are commonly produced just before death when, as often happens, the heart beats with rapidity and feebleness but they were firmer and their interiors were dryer. When they were removed from the heart the endothelium was torn off in small spots where the fibrin had become attached.

It would be difficult to explain the development of a heart murmur in the second case except by supposing a cardiac thrombus existed such as was found after death. There also existed a blood state which disposes to thrombosis and when the murmur developed the heart was beating with great rapidity and feebleness. In a word the most favorable conditions existed for the formation of a thrombus.

A third case of cardiac murmur with associated physical signs which simulated mitral insufficiency, was first seen at my office:

A woman about 35, with a small family, came to me with feet much swollen, considerable shortness of breath on exertion, frequent coughing, irregular and rapid beating of the heart. Her face and chest were rather thin. She was sallow. I found her pulse medium in size, soft, quick and irregular. She had little appetite. She did not complain of indigestion. Her bowels were constipated. She thought her urine was a little less than normal in amount. A sample brought some days later contained no albumen and appeared normal. She menstruated regularly. Her cough was bothersome because of its frequency. She expectorated, not copiously, a frothy sputa. A physical examination of the chest exhibited the usual evidences of a diffuse bronchitis of moderate severity. The precordia was a little more prominent than natural. The heart's apex beat could be faintly felt and scarcely seen. No substernal throbbing could be felt except upon deep pressure in the epigastric region where there was considerable tenderness. The area of cardiac dulness extended to the left nipple and for two inches directly below it; and to the right border of the sternum. No abnormal fremitus could be felt over the heart. A soft systolic murmur was plainly audible at the apex and to the left of it, and less plainly near the lower end of the sternum. At the base the first sound was normal but over the pulmonary artery the second was accentuated. The liver was a little depressed and slightly broader than natural. The case seemed plainly one of mitral insufficiency with slight dilatation of both ventricles, considerable cardiac weakness; bronchitis and moderate emphysema; moderate engorgement of the liver and general œdema. Relief was readily obtained by cardiac tonics. In two weeks the œdema was altogether gone; her cough almost gone; her breathing was easy except when quite rapid movements were made. Her appetite returned. In every way she felt greatly improved. A physical examination revealed very little change in the signs of cardiac disease except that the heart beat with regularity and greater force, the apex was more plainly visible though its impulse was feeble. I lost sight of the patient after this for 4 months. I was then asked to visit her. She had been in the country and for the first 3 months did well. During the last month her old troubles—cough, dyspnœa, œdema, inability to eat and great debility returned. She was confined to her bed and compelled to maintain a semi-recumbent position. She was able to sleep very little because of her cough and dyspnœa. Her abdomen was distended with ascites. Her urine was scant and contained a small amount of albumen but no sediment. Her heart was very rapid and irregular. Otherwise the physical signs of cardiac disease were the same as when I saw her first. The pulse was small and soft. She was so imperfectly cared for at home that I urged her to enter Mercy Hospital. She lived only four days longer. An autopsy demonstrated firm adhesions between the pericardial surfaces except posteriorly. In front, underlying the lower part of the sternum and extending to the left of it to the apex, was a hard, immobile plaque of partly calcified fibrous tissue, about 2 inches broad and 4 inches long. It covered most of the anterior surface of the heart. It was cut with difficulty and at points was completely calcified. The ventricular walls were moderately hypertrophied. The valves were quite normal and the valvular orifices were not distended.

She never recalled any attacks of pericardial pain or tenderness, but had acute articular rheumatism two years before she was first seen by me. After that she suffered from bronchitis frequently and was constantly dyspnœic when she exerted herself much.

This case again illustrates the fact that the usual combination of signs of a valvular lesion may coexist though the cardiac valves are without flaw.

Pericardial adhesions can rarely be diagnosed and certainly not when a fibrous or calcified pericardium makes systolic retraction of the sternum and intercostal spaces impossible. Such adhesions are occasional causes of systolic murmurs. The mechanism of these murmurs cannot be certainly explained. They are, however, probably due to irregular contractions of the muscle fibres composing the heart's wall, so that unusual currents or eddies are produced in the blood within the heart.

Anæmic murmurs are so common and usually so easily recognizable, that they scarcely need comment. The signs to be relied upon for their diagnosis as stated by the best authorities are the following: Anæmic and functional murmurs are usually soft, blowing and systolic. When most characteristic they are clearest and loudest about one or one and a half inches to the left of the sternum in the second interspace. Sometimes they are most audible a little lower or even at the apex. When at the apex they are usually heard in a very circumscribed space. They are never loudest over the aorta. Hypertrophy of the heart is not associated with anæmic murmurs though dilatation often is. Murmurs in the veins of the neck are frequently present in anæmic states.

Murmurs due to valvular disease may also be soft and blowing. Though functional murmurs are almost uniformly systolic, they may rarely be diastolic. Murmurs heard at the base of the heart and well to the left of the sternum are uniformly anæmic, but occasionally may be confounded with pulmonary murmurs and the rare mitral murmurs which are heard plainest over the auricle. These latter when characteristically located are close to the sternum. Functional murmurs, I believe, are often loudest at the apex. They are, however, rarely much diffused or propagated to the left into the axillary space, but as in the case of fibroid pericarditis, which I have just described, they may be diffused and transmitted as valvular ones commonly are. An intense anæmia is not much more liable to be accompanied by a cardiac murmur than one of moderate severity.

Soft systolic murmurs occasionally develop as convalescence is being established in rheumatism when the blood has become moderately thin. In two such cases I have heard the murmur only in a small space at the apex. The heart in each instance was slightly dilated, beating rapidly and with feeble force. Under tonic treatment in the course of two or three weeks, the hearts regained their vigor and the murmurs disappeared. Such murmurs are undoubtedly functional and do not signify endocarditis. An endocarditis which can produce a murmur usually develops before convalescence begins and very rarely disappears entirely. Accidental or functional murmurs are quite as likely to develop after rheumatism as after other fevers and prostrating diseases.

It is true that for the diagnosis of a heart disease the *tout ensemble* of cardiac physical signs is of the greatest importance, the mode of their development, the condition of the patient before and at the time of examination, the existence of a former illness such as rheumatism or chorea, the progress and complication of the affection, in a word the medical history of a case is of equal importance. A diagnosis often cannot with safety be based upon physical signs only.

65 Randolph Street, Chicago.

Discussion.

Dr. Newcomb, of New York, referring to his own experience as examiner for an industrial branch of one of our large insurance companies, stated that he frequently made examinations of individuals who had just come in from work, frequently too after a long walk, and that he had found that murmurs are sometimes distinguishable under such circumstances which are not at all audible in repose. In certain cases of long-standing debility there is a regurgitation through a valve which is not due to disease, but due simply to the relaxation of the orifice. Murmurs of overaction are explained as due to the fact that the action of the ventricle becomes so powerful that the mitral valve is not able to close the orifice completely, and blood is forced back into the auricle.

Dr. Kennedy, of Michigan, remarked that in examinations of boys for the Navy, murmurs have been found which could not be accounted for except as a result of cigarette smoking. Murmurs were also found in the recumbent posture which could not be found in the erect posture.

Dr. Davis explained that the time at his command had not been sufficient to go into the consideration of the cause of this condition. All the explanations that have been given are purely theoretical. We have no experimental proofs as to the causation of these murmurs. The formation of a fibrinous clot as a cause of the murmur is not essential, but probably does occur frequently. He felt confident that this was the cause of the murmur in his second case, from the character of the murmur and from the character of the clot.

The title of the next paper was:

THE IMPORTANCE OF POSITION IN EXAMINATION OF DISEASES OF THE HEART.

BY O. B. CAMPBELL, M.D.,

OF OVID, MICH.

The heart (the only organ in the body which is never at rest) with its investing membranes, the serous and fibrous pericardium, is situated in the median line of the thorax, and occupies the entire space between the two lungs and pleuræ. This pericardial sac includes the heart, the origin of the large blood vessels, and possesses very complete fixation. Next to the pelvis Paul claims the pericardial sac to be the least movable region in the human body. Its apex is fixed to the skeleton by three ligaments, one coalescing with the inter vertebral ligament of the third cervical vertebra; another uniting with the middle aponeurosis of the neck is inserted into the hyoid bone, the other passes anteriorly to the sternum.

The base of the pericardium is fixed to the centre of the diaphragm and through the medium of this muscle is united posteriorly to the spinal column, and anteriorly to the ensiform appendix.

Now, the heart, which may be compared to a hollow muscle acting like a great force pump to propel the blood through all parts of the body, is kept in place by the great vessels which spring from its base, and by the attachments of its investing sac, the pericardium, which has been shown by before stated anatomical facts to be fixed solidly to the skeleton, and therefore changes its position but little, during the respiratory movements of the diaphragm, hence the apex beat in a normal heart is but slightly raised or lowered during inspiration or expiration, and whether the patient is examined either lying down or standing; but on the other hand quite marked displacements may be observed in abnormal cases where hypertrophy has increased the weight of the organ, and the resistance of the ligaments has been gradually overcome.

Altered posture of the body always displaces the normal heart transversely which sinks from three to six centimeters when lying on the left side, and from one to three centimeters during right decubicus. Position also illustrates the effects of gravity on the heart in the greater force and more extended apex beat, when the chest is bent forward, a procedure that should always be practiced when this beat is obscure.

In position the axis of the heart is directed from above downwards and to the left, two-thirds of its bulk passing to the left, and one-third to the right of the median line of the sternum. Its upper border corresponding to a line drawn across the sternum on a level with the upper border of the third costal cartilages, its apex lies immediately behind the sixth left costal cartilage inside the mammillary line. The lungs passing downward from their apices meet each other behind the sternum at the level of the second rib and are separated only by the mediastinal fold of the pleura until they the reach level of the fourth rib where they again diverge. Thus it will be seen that both auricles and part of the ventricles are completely covered by lung tissue, which is a very bad conductor of heart sounds, but after the divergence of the lungs at the level of the fourth rib we have about one-half of the right ventricle and the apex of the left, between which and the chest wall no lung tissue intervenes, yet the extent of heart surface not covered by lung tissue is subject to constant variation; during deep inspiration the edges of the lungs may converge so as to cover the entire surface of the heart, and on the other hand during forcible expiration the margins of the lungs recede to such an extent that the larger part of the heart's surface comes close to the chest wall.

The extent of the movement of the thorax in normal respiration is also controlled to some extent by the position of the body, and is one-half centimeter less in lying down than in standing, also in turning from the back to the side in the recumbent position the lung which is uppermost descends from two to three centimeters.

From what has been said concerning the anatomical relations of the heart and lungs it is evident that in the normal condition of the thoracic viscera, the heart is but little displaced vertically by a change in the position of the body, but that its transverse position is readily affected by such change, also that the principle obstacle in the conduction of the sounds of the heart is the presence of lung tissue between the organ and the walls of the chest, which shows the great necessity of not only examining a patient during tranquil respiration, but also during forced expiration.

I now wish to speak of one position in auscultation of the heart which I regard as of great importance and in which I am compelled to disagree with some of our standard authorities. Paul Guttmann says all murmurs are louder when the patient stands or sits than when he is recumbent. I now wish to say that nearly all murmurs are louder when the patient is recumbent than when he is standing or sitting. I am willing to admit that in somewhat rare instances murmurs can be heard more distinctly in the erect than in the recumbent position, but in a large majority of all cases where murmurs are detected in the upright position they will be greatly increased by placing the patient in dorsal decubitus. According to my own observations this rule holds good in 78 per cent. of all cases examined.

I will here give statistics of one hundred consecutive examinations in which I have kept a record to determine this point (and so far as I am aware they are the only statistics which have been collected bearing on this matter) which are as follows:

Total number in which murmurs increased during dorsal decubitus, 78. Murmurs not effected by changing position of body, 12. Murmurs not perceptible in standing, but developed on lying down, 4. Murmurs more developed in upright than in recumbent position, 6. These examinations were all made upon the soldier population of the State of Michigan, and each applicant was carefully examined by my two colleagues, and the accuracy of these statistics fully concurred in.

This was followed by a paper on

NUTRITION.

BY M. J. CROUCH, M.D.,
OF UNION, KY.

I do not propose to present to you more than a suggestion of the merits of nutrition, and its relation to pathology. My studies along this line have forced me to conclusions which seem of vital importance to the science of medicine. It is true, our conclusions are more or less colored by the environments of the place from which we view the subject—so let us view the subject from analogous laws of nature.

From the true scientific standpoint, in the organisms lie the principles of life, in the environments the conditions of life.

The cart has been before the horse long enough—let us reverse the awkward position, and place them in a more practicable way. Instead of teaching that an *abnormal nutrition* is the *result* of "*disease*," let us teach that "*disease*" is the result of abnormal nutrition. Then, and not till then, will we make progress toward the goal of medical science.

The most important part of physiology is *nutrition.* The most important part of pathology is *nutrition.* Disease is not an entity, but the result of an abnormal or vicious nutrition. It is a process, differing from the normal processes only in *form* and *course.* All normal growths must be nourished, or they degenerate and die. So all morbid growths must be nourished, or they undergo like changes. What is the difference between the two conditions? Only a difference of nutrition. In the former it is according to natural laws, in the latter in violation of those same laws—it is vile.

There are natural laws reaching across the length and breadth of the whole organic world. Even the inorganic world is not without laws. Thus, from the lowest to the highest, *all* are subject to the powers that be.

Chaos does not exist anywhere in the known world; not since the hand of God moulded it into the things that be. Seeing all things are subject to natural laws, it is not reasonable to suppose that the most perfect creatures of God's handiwork, even the crowning piece—man, should be a monstrosity in the universe. Yes, man was created under, and lives and dies under natural laws, as well as spiritual laws, *which spiritual* laws are but a reaching upward of the laws of nature.

Progress is expected, and nutrition emphasized, in every part or parts, portion or portions of the known organic world. It is the same cry that has come rolling down the ages, and has found an echo wherever organic matter lived, from time immemorial: "Give us bread or we die." So demand all living organic bodies, and man is no exception. Then, if an end is so important, the means unto that end must be of vital importance.

Life is the desideratum of all living creatures, and nutrition is an absolute necessity—*the only means to that end.* Then nutrition must be the most important process in life.

Is it "fever" you would inquire about? Is there not a normal heat production in all living organic bodies? Find its source, form and course, and you will have no trouble with the abnormal condition, for every abnormal—diseased—condition has its prototype in the normal, physiological. It could not be otherwise according to the laws of nature. When the nutrition of the body is normal, the heat produced and functions performed by that body are normal.

When the nutrition is abnormal, the heat produced and functions performed by that body are abnormal, and as varied in results and as far-reaching as pathology. Thus inflammations, hyperplasias, hypertrophy and different degenerations may be due to the same form of nutritive disturbance, the different results due to the different *course* pursued. The cause is the same, the results varying as the form and course vary. These varieties may become less numerous, as we become more familiar with the cause. You wish to know the nature of this cause? I told you that nutrition was at fault—*first*, last, and all the time. The causes of this faulty nutrition are predisposing and exciting. The predisposing causes would embrace all such as heredity and environment. Exciting causes would embrace all such as were irritating to the organism. Here the field broadens, and the eyes wander over unlimited space, bringing into view many strange things, difficult to see and to understand. It is ever so in a new country to the first explorers. I only hope to point to the way, go as far as I *can*, and trust others better equipped, and time, will open up the way and reap the harvest. So, in concluding these suggestive thoughts, I recapitulate the pertinent point, that normal nutrition is to physiology what abnormal nutrition is to pathology.

The chairman then announced the following Executive Committee for the Section: Dr. H. A. Hare, Philadelphia; Dr. I. E. Atkinson, Baltimore; Dr. N. S. Davis, Jr., Chicago.

THIRD DAY—JUNE 9—MORNING SESSION.

A paper was read entitled

THE CARDIAC INDICATIONS AND CONTRA-INDICATIONS IN THE TREATMENT OF PNEUMONIA.

BY J. M. ANDERS, M.D., PhD.,

PROFESSOR OF THEORY AND PRACTICE OF MEDICINE AND CLINICAL MEDICINE, MEDICO-CHIRURGICAL COLLEGE, PHILA.

It is a well known fact that in acute lobar pneumonia failure of heart power is the immediate cause of death, as a rule.

In the first place there are three leading factors which enter into the causation of cardiac-insufficiency in this disease, which factors may operate singly or in combination. They may be conveniently considered under as many different heads, to-wit:

First. The heart failure may be due to the toxic effects of the ptomaines present in the blood, on the heart muscle and ganglia.

Secondly. It may be due in part at least to the obstruction offered to the pulmonary circulation by the inflammatory exudate in the air vessicles.

Thirdly. The formation of cardiac thrombi may lead to right ventricular dilatation and exhaustion of heart power.

Pneumonia belongs to the acute infectious diseases, hence it is intelligible that on account of the overwhelming of the system by the ptomaines produced by the pneumococcus, the heart may become exhausted. It is not an uncommon event in the experience of the busy practitioner to meet with instances of this malignant and fatal type of the affection. These cases can as a rule, be recognized during the progress of their brief course. Auscultation of the heart reveals a feeble, short, first sound, associated usually with a feeble aortic and pulmonic second sound. The pulmonary artery second sound is sometimes accentuated when these cases reach the stage of complete consolidation, though most generally for a brief period only. But though the heart power fails under these circumstances there are few special indications presented by the organ for treatment.

Alcohol in *moderate* doses is of the first importance since it aids the digestion, imparts vigor to the heart muscle, stimulates respiration and the nerve centers. We should supplement the action of the alcohol by the administration, of strychnia which stimulates, more particularly, the cardiac nerve ganglia, the vasomotor and the respiratory centers. Digitalis is to be employed cautiously, indeed, is only useful when the pulse becomes very frequent as well as irregular or intermittent. Under these circumstances digitalis, by lengthening the period of diastole, facilitates the nutrition of the cardiac muscle.

In this connection the investigations of Drs. G. and F. Klemperer, carried out to ascertain among other things, whether pneumonia can be cured by the blood serum of immune animals, or those that have recovered from the disease, are of considerable interest and importance.

Their experiments "confined to rabbits show that the inoculation of any nutrient medium, in which the pneumococcus has been cultivated will protect an animal against pneumonic septicæmia. Again, serum from animals enjoying immunity cured pneumonic septicæmia, especially when introduced into the circulation, and this in 24 hours, as a rule. It was found that when the pneumococcus enters the body of an animal it generates a poison 'pneumotoxine' which can be isolated: this sets up a febrile condition, lasting several days, by which time another substance 'anti-pneumotoxine' is formed, and through its influence cures pneumonic septicæmia."

The drugs employed, in the most prevalent methods of combating the local engorgement of the lung in the first stage of pneumonia, for their influence upon high temperature to some extent, as well as upon the heart, are veratrum viride, aconite, and antimony. To the depressing effect on the heart of the pneumonic poison, the majority of physicians are still in the habit of adding the depressing influence of cardiac sedatives. Now whilst I am willing and ready to concede to the facts, that veratrum viride and aconite act as vaso-motor depressants, quiet the heart and relax the blood-vessel walls, I affirm without hesitation that they do so at the expense of cardiac power,—a thing to be scrupulously avoided. Again, it is undeniably true that if the exhibition of arterial depressants do not abort the disease promptly, then an additional load has been imposed upon the heart, whilst the pathological changes, owing to the fact that this disease rapidly undermines the vital forces, have received new impetus.

To attempt to relieve engorgement of the lung is justifiable, and this can frequently be most safely accomplished by local means, especially cupping and leeching or by the application of the ice box. The excited action of the heart which tends to keep up the pulmonary engorgement may be controlled by the use of morphine which also allays nervous excitement and pain without depressing the central organ of circulation. In sthenic types of the affection moderate bleedings from the median basilic vein would meet the same indications more promptly, and with less danger from ulterior deleterious effect upon the heart than by the use of such remedies as aconite, veratrum viride, antimony, etc.

Prof. H. C. Wood,[1] contends that the administration of veratrum viride bleeds the patient into his own abdomen, leaving the blood to be utilized subsequently when needed; and in this fact, he tells us, lies the advantage of veratrum over venesection. This noted observer admits that this agent depresses the heart, but claims that it does not exhaust it. Now it seems to me that to depress the heart which is already over-burdened, even for a couple of days, must tend to "exhaust it." Occasionally cases are met with in which there is a comparatively large area of lung tissue consolidated with a disproportionately mild type of systemic infection. The heart acts regularly, the first sound is good and the pulmonary second sound is accentuated. In these instances arterial sedations are not so fruitful of evil results, but they recover all the more promptly when the use of this class of remedial agents is omitted.

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[1] Medical News, January 18, 1890.

In the severer forms of acute lobar pneumonia, the temperature it is well known, is often high and rarely there is hyperpyrexia. The question that confronts us here is, Can we produce the temperature in this disease without increasing cardiac weakness?

Generally speaking pneumonia is a self-limited disease, the crisis being reached usually before the end of the first week. Hence there is little need to attempt to lower temperature in a direct manner in the majority of instances. A temperature not exceeding 140° F. calls for nothing more than frequent cold sponging of the surface and the exhibition of moderate doses of quinine, for example, 16 to 20 grains daily in divided doses. This drug has a slight antipyretic influence whilst it does not depress the heart, but rather supports it. Such internal antipyretics as phenacetine, antifebrin and antipyrin should be rigidly eschewed, since their good effects in combating high temperature is more than counterbalanced by the evil consequences in depressing the cardiac, respiratory, and vaso-motor nerve functions. Very high temperature demands cold to the surface either in the form of cold packs, or cold or gradually cooled baths. This method I have recently followed with very gratifying results. Dr. Bordman Reed,[2] as the result of a statistical inquiry into various modes of treatment,concludes, "That water locally applied either by wet packs or in the form of baths, after the Brand method, is the most efficient single remedy or therapeutic measure for acute pneumonia."

We come now to the consideration of the second causal factor in the production of cardiac exhaustion, or that due to the barrier offered to the pulmonary circulation by the presence of the inflammatory exudate in the air vesicles.

In the first place it may be questioned whether the mere obliteration of a single lobe or even larger mass of lung tissue seriously interferes with the respiratory function, seeing that in animals as well as in man, life may be maintained for a long period after one entire lung has become impervious to atmospheric air. Neither do I believe that the power of the right ventricle would be inadequate if pneumonia consisted merely in a localized inflammatory process. This organ, therefore, is always predisposed to further anatomical changes, on account of the weakening influence of the ptomaines in the blood. It is readily seen then why, in many cases, the backward effect of the obstructive influences in the lungs are evidenced by the development of an overfilled and dilated condition of the right ventricle. The physical signs present, together with the signs of venous stasis, easily distinguish this condition from failure of the whole organ in consequence of intense systemic infection. The pulmonary second sound, which is at first accentuated, due to the strong action of the right ventricle and the strong recoil of blood in the pulmonary vessels, becomes progressively weaker until exceedingly feeble, *pari passu* with the diminution in the power of the right ventricle. This condition of the right heart is associated with an œdematous condition of the lung, and great difficulty with the respiration, as a rule. The complexus of morbid conditions present in these cases is to be relieved by increasing right ventricular power on the one hand, and by removing the redundant liquid from the lesser circulation on the other hand. The latter indication is to be met by the repeated use of wet or dry cups. If in spite of these measures there is a definite increase in the severity of the symptoms, then free bleedings constitute sound practice. Venesection here acts in accordance with ordinary hydraulic principles, and only in this way. To attain to the same end some authors recommend dilating the arterioles by the use of the nitrites, etc., thus inviting the blood from the venous system to the arterial. If it were not for the fact, that in these cases too little blood reaches the left ventricle, the mode of treatment before alluded to should be sanctioned. In my opinion the physician's chief aim should be to propel more blood from the right to the left ventricle, after having removed as much of the obstacle in the lungs as possible, though to accomplish both objects i.e., dilating the arterioles and facilitating the cardio-pulmonary circulation without debilitating the heart would be the ideal treatment. I have recently attempted this, have administered digitalis with a view of increasing the capacity of the right ventricle for work and simultaneously have given small doses of nitro-glycerine for its effect in relaxing the blood vessel walls, with apparently good results. I was lead to use nitroglycerine in consequence of having learned the fact, that, in small doses, it is a cardiac stimulant rather than depressant, and hence, is not open to the same objections which I have urged against arterial relaxants as a class. Strychnia in large doses, and alcohol in moderate doses, must be added to the treatment. Doubtless strychnine is the most potent single agent to support the heart under these conditions. It is most efficient when administered hypodermically in doses of $\frac{1}{40}$ grain every four hours. Inhalations of oxygen are useful in these cases; they relieve dyspnœa and the frequency of the respirations by furnishing sufficient oxygen, in greatly diminished bulk, to ærate the blood. Thus they also accelerate the blood current through the lungs, since it is well known that respiratory impurities in the blood retard the flow of this circulating medium. Oxygen should be employed in this manner when the cyanosis and dyspnœa continue to grow definitely worse despite the use of alcohol, digitalis and strychnine. I have seen truly surprising results from its employment in well selected cases of acute lobar pneumonia in hospital practice.

The formation of cardiac thrombi in the course of the disease constitutes a more influential factor in the production of cardiac exhaustion than is generally supposed by writers on this subject. Doubtless they are often preceded by commencing heart failure, and often, too, are associated with œdema of the lungs.

In acute lobar pneumonia the fibrin factors of the blood are greatly increased; a condition favoring their generation. And, to facilitate the same result, we have the over-filled state of the right heart as well as the sluggishness of the circulation in both heart and lungs. During a recent discussion of the subject of the treatment of lobar pneumonia before the Philadelphia County Medical Society, I took the position that "heart clots" are frequently followed by dilatation of the right ventricle, cyanosis and finally death. Two of the speakers, Drs. S. Solis-Cohen and Judson Daland, subsequently sustained me in this view. Dr. Daland stated that in the course of some examinations of the blood from patients ill of various diseases, he had occasion to examine blood taken from several cases of acute lobar pneumonia; and that when he attempted to examine specimens of this fluid it would coagulate in the capillary pipette with great rapidity, hence requiring special manipulations to make the investigations.

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[2] Therapeutic Gazette, March and April, 1892.

The symptoms vary with the rapidity of their production. When this is gradual, the signs and symptoms are not immediately urgent; the dyspnœa is increased, the respirations more hurried, the pulse becomes more frequent, finally irregular and intermittent. The physical signs are somewhat peculiar. The cardiac impulse is often irregular, while the area of the heart's percussion dulness extends to a point beyond the right edge of the sternum. On auscultation a systolic murmur is often heard over the xyphoid cartilage, which murmur is transmitted upward and toward the left. The physical signs referable to the right heart may arise independently of œdema of the lungs—a fact which goes to show that heart clots may be, most probably, the starting point of a series of conditions leading to a rapidly fatal issue. Dr. B. Ward Richardson long since directed attention to the value of the ammonium salts in this affection with a view to maintaining the fluidity of the blood; and in this opinion I heartily concur. If there be reason to suspect the presence of thrombi, the administration of the preparations of ammonia, though they offer little promise of giving favorable results, should be vigorously pushed in the hope that the clots may be dissolved.

Alcohol and digitalis are to be employed cautiously, while strychnine is to be administered hypodermatically in full physiological doses; and when collateral fluxion in the lungs with serious respiratory disturbance develop, oxygen inhalations, for the reasons previously adduced, must be employed.

In conclusion, I desire to re-affirm a few of the more salient points already rehearsed in your hearing. To the fact that there are three leading causes of heart insufficiency in acute lobar pneumonia, especial emphasis should, I think, be given. Among these, the baneful effect upon the heart of the toxic matter in the blood is the most pernicious, is a factor in every case, and is not unfrequently the sole cause of death. Cardiac exhaustion due to the action of these ptomaines can be differentiated and presents peculiar indications for treatment, specially useful being antiseptics, alcohol and strychnine.

In a large proportion of cases the right heart, already weakened on account of general infection, becomes further weakened and finally exhausted as the definite result of the obstruction opposed to the circulation in the lungs. In these instances the right ventricle is over-distended and congestive œdema of more or less of the non-consolidated portion of the lung exists. This combination of conditions calls for relief in two directions. First, the removal of the abnormal blood pressure in the pulmonary vessels must be relieved either by cupping or free bleedings; the cardio-pulmonary circulation must be facilitated by using inhalations of oxygen, and strengthening the right ventricle, by administering digitalis generously, strychnine and alcohol. The use internally of the nitrites in small doses is to be advised, while the use of all other arterial relaxants *is to be condemned*, since the agents that accomplish this end tend to depress the heart.

The third, though perhaps, not the most unimportant cause of right ventricular exhaustion, are the cardiac thrombi, which are generated largely in consequence of the sluggish pulmonary circulation and the increased tendency to coagulation of the blood. Their presence is frequently demonstrable during the progress of the disease. For the purpose of preventing their formation preparations of ammonium should be employed, since, as before indicated, they tend to preserve the fluidity of the blood. When "heart clots" of appreciable size exist, and even when their presence is only highly probable, this agent should be exhibited in liberal amount, though as before intimated it is quite doubtful whether the remedy is powerful to liquify these offending masses. Digitalis is to be used cautiously, alcohol in moderate doses and strychnia liberally.

Dr. Bailey, of Louisville, in opening the discussion remarked that he believed the treatment of croupous pneumonia depended almost if not entirely upon the management of the heart. He thought the essayist had given us a most admirable explanation of the heart's action and the course for the proper treatment of the disease. The proper means of reducing the temperature is of the greatest importance. Is there a remedy by which we can reduce it with as little reduction of the heart action as we can by the use of cold water? This preparation he thought we had in phenacetine. He was as willing, he said, to use it in this condition as he was cold water. He believed also that in that condition in which the avenues of the circulation are congested and it is recommended to abstract blood, good results have not been obtained from venesection since fifty or sixty years ago. He commended the ammonia preparations for the conditions indicated but thought they had no power to dissolve clots already formed, although they may prevent the formation of them. He recommended also the nitrite of amyl for opening up the capillaries and getting rid of obstructions, but the principal remedy is digitalis, which he thought was worth all other remedies combined for the relief of obstruction in the lungs.

Dr. Truax, of New York, desired to endorse Dr. Ander's paper, particularly what he had said on the subject of venesection. For a number of years, he said, I have been in the habit of extracting blood in conditions of great embarrassment to the circulation. I have done it experimentally. I have had the internes of the hospital pick out six or seven, or eight of the cases whom they thought most likely to die of heart failure and those who seemed to be the worst, and we have tried different forms of treatment over and over and over again. There is no doubt in my mind that there is any other means by which embarrassment of the circulation in the lungs can be removed and the heart enabled to do its work as by venesection. Stimulants will tide over the heart's action until the congestion is removed. I am sure that hundreds die every year who would be saved if they were bled.

Dr. Herrick, of Cleveland, stated that his line of inquiry would not agree with that of the essayist. He thought we were given too much to theory as to the causation of pneumonia. In this respect he confessed that he was somewhat adverse to the profession as to the theories of the causes of disease. He opposed the bacteriological origin of disease.

Dr. Greenlee, of Kentucky, expressed hearty endorsement and approval of the views of the last speaker. He saw no reason for the supposition that there is a micrococcus!

Dr. Pennell, of Ohio, thought that in some cases you must whip the tired heart up by the use of stimulants, whereas in other cases, venesection must be resorted to.

Dr. Didama, of New York, remarked that Neimeyer and other standard authors state that in some cases the congestion must be reduced by the removal of blood.

Dr. Musser, of Philadelphia, said that this is a subject which demanded from us a clear and full consideration. We ought to have clear ideas on the subject of pneumonia; and the clearer cut our ideas are, the better will we treat the disease. But if we are asked how to treat pneumonia, we can *not* lay down any rule. Our lines of treatment must be based upon the study of the individual case; nevertheless, we can form certain general ideas which we can keep in view. He was thoroughly convinced, and believed that he was in accord with modern pathology, that pneumonia is a specific infectious disease. Such being the case, we turn naturally to the form of treatment which might be considered specific; but such we do not as yet know. We have no specific means of combating this disease any more than we have for the other specific diseases, unless we except malaria. The treatment therefore resolves itself into the treatment of the inflammatory process, and there is no doubt about it that we have only three measures, actual, positive measures that we can always rely upon, for the combating of inflammation. They are cold, bloodletting and rest. Of the importance of cold locally, I am thoroughly impressed. I am also thoroughly in accord with the remarks that have been made on the use of bloodletting. I believe that in almost all cases it would be of advantage. It certainly would not do any harm and it might do a great deal of good. Advantages would arise in almost every case if bloodletting were practiced early. We must, however, be careful as to the indications for bloodletting. We must consider the physical signs, and not only these, but the condition of the pulse, the respiration and the temperature.

Absolute rest is important—not only the rest of the patient in bed, but the freedom from anxiety—perfect nursing is indicated. In securing this complete rest, opiates are demanded. I am always glad to give opium or some of its preparations. Possibly opium may help to allay inflammation as some pharmacologists think.

One word, the speaker continued, with regard to the use of proper remedies. I think that strychnia is a proper remedy, and it may tide our patient over sometimes when they are sailing pretty close to the shore. I am in favor of nitro-glycerine, particularly if there is any tendency to heart failure or chronic parenchymatous nephritis. Of digitalis, I cannot say much. I would prefer alcoholics and preparations of ammonia. Of alcoholic stimulants, we must say that a certain time comes when champagne can be used instead of whisky, and I am sure that the use of this readily diffusible stimulant has stood me in good stead.

We cannot estimate too highly the beneficial effect of good nursing. As to blood letting in the later stages, I am sorry to say that my experience has not been very good. In nearly all of my cases death has ensued in spite of the venesection. Oxygen, I am glad to endorse.

Dr. Anders, in closing the discussion supported the view that pneumonia is an acute infectious disease. In regard to the treatment, he said that so long as we have no specific antidote, we must simply endeavor to support the patient until the disease has subsided.

Afternoon Session.

The only papers read at the afternoon session were those on

THE ANALOGY BETWEEN ACUTE IDIOPATHIC PLEURITIS AND ACUTE ARTICULAR RHEUMATISM.

BY E. L. SHURLY, M.D.,

OF DETROIT, MICH.

In the year 1887, I read a paper bearing the above title before the Michigan State Medical Society, which at the time attracted very little attention. However, subsequent observation of these diseases has led me to think that too little importance has been placed upon this question; and for this reason, I venture now to bring the matter again to public notice.

Attention was first called to this relationship by Vallieux in 1854, and afterwards by Davis, of London, England; but without awakening much thought at that time or subsequently.

In the paper alluded to, the theoretical basis assumed of the identity of the two diseases was mainly two-fold, on the one hand histological, because the pleura as well as the synovial and other serous membranes spring from the same primordial layer, the meso-blast or middle layer, and ultimately develop into the endothelial layer which is the lining of all closed cavities, and, on the other, because a correspondence between the phenomena characterizing the general history of the two diseases seems to exist.

This will become quite convincing if one takes the pains to carefully generalize and compare the various steps in the progress of the two diseases, idiopathic acute pleuritis and acute rheumatic arthritis. Besides, noting how frequently the pleural as well as the pericardial structures participate in the rheumatic affection, I am aware that such a complication of articular rheumatism is not recorded by medical writers as of common occurrence. Yet, I believe, with all due deference, that it is because it is so frequently overlooked, just as syphilitic pleuritis has been, until recently, so generally overlooked; nor would such a mishap appear unusual when we consider how insidious and often localized may be an attack of fibrinous pleuritis. I certainly believe that a retrospective view of the clinical histories of cases of articular rheumatism by any practitioner present would recall certain signs of pleural implication, which, at the time, went unobserved, or were attributed to either secondary or concomitant manifestations, or cardiac complication.

I may mention such complaints as fugitive pain in the side, transient respiratory embarrassment, sudden exacerbations of temperature unattended by increased joint disturbance, etc.

Often, these phenomena are taken as denotive of peri-cardiac or cardiac implication, although close physical exploration fails to recognize the pathognomonic signs. Yet the mind is so intense upon the usual course of events, that failure to recognize the adventitious cardiac sounds, is attributed to lack of auditory power—so strong, in the best of human minds, is preconception.

It occurred to me a few years ago, after listening in vain for signs of cardiac disease in a given case, and when about to give up the search—but not the conviction—that I chanced to place my ear in the infra-axillary region and there detected a slight pleural friction sound, which, of course, determined the diagnosis, and which, I must say was amply corroborated by the subsequent course of the disease.

Besides these considerations we may apply as an additional proof the crucial test of treatment, a practice we are all familiar with, for the purpose of clearing away obscurity surrounding many cases of undetermined syphilitic disease. In this way one may often observe with great gratification the prompt check to the course of acute fibrinous and fibrino-serous pleuritis, and the rapidity with which the effused material is absorbed.

In illustrating the point, I would cite a very serious case which came under my observation lately in association with my colleague, Dr. Chapaton, one of our keenest observers, in which nearly the whole left pleural surface together with the pericardium was involved.

Without wearying you with details, suffice it to say, that under a so-called anti-rheumatic treatment principally—such as the salicylates—the disease rapidly declined in a manner, to say the least, not possible under the established plans of treatment adopted for this disease. In this case there were no arthritic manifestations, until about the tenth day, when the patient complained of pain and slight swelling of the right hip joint and vertebral joints.

In other cases which I have observed, one of the knee-joints seemed to be the elected spot. Although some cases where the pleura was the primary seat of disturbance, never showed any arthitic disease.

Koster, in a late article published in the *Therapeutische Monatschr.* says that the use of salicylates in the treatment of pleuritic effusions has not become as general as it should. He has treated thus thirty-two cases, twenty-seven of which were primary and five secondary. In some of these cases the effusion disappeared in from five to seven days. The results were most favorable in recent cases, although in all but ten the absorption was very rapid. As usual with German writers, he does not mention the observations made in regard to this subject by persons of other countries.

Before concluding there is another point I would like to call attention to, and that is the prevalence simultaneously of acute articular rheumatism and acute iodopathic pleuritis in certain localities. Is it not frequently observed that those regions which furnish many cases of the one disease, also furnish many cases of the other and *vice versa?*

Hereabouts, neither acute pleuritis nor acute articular rheumatism are common. While in districts where one of these affections is common, I have found upon inquiry that the other also is frequently met with.

In conclusion I would emphasize in the first place the necessity for "looking out" for pleuritis in connection with articular rheumatism and *vice versa;* and, secondly, would urge the treatment of acute idiopathic pleuritis mainly upon an anti-rheumatic plan, both dietically and medicinally.

This was followed by a paper entitled:

ADDITIONAL EVIDENCES OF THE VALUE OF FORCED RESPIRATION (FELL METHOD), IN OPIUM NARCOSIS. REPORT OF CASES.

BY GEO E. FELL, M.D., F.R.M.S.,
OF BUFFALO, N. Y.
LATE PRESIDENT AMERICAN MICROSCOPICAL SOCIETY; PROFESSOR OF PHYSIOLOGY AND MICROSLOPY, MEDICAL DEPARTMENT NIAGARA UNIVERSITY; PHYSICIAN TO SISTERS OF CHARITY HOSPITAL, ETC.

It is now nearly five years since I saved my first life by systematically respiring for a human being by forced respiration. Up to the present time nineteen human lives have been saved by this means. The method has been given as great publicity as possible by publication in well known medical journals and proceedings of societies. The fullest detail as to the arrangement of apparatus has been described, so that the successful methods could be utilized and the apparatus prepared by any one sufficiently interested. I have always been willing to aid and assist any one disposed to utilize the method. The most simple means by which the operation could be satisfactorily performed have been detailed, with a view of aiding the practitioner in urgent cases where the complete apparatus could not be obtained. However, what results have been accomplished as already stated, the saving of nineteen human lives, have with few exceptions taken place through my own individual endeavors. Many human beings, as the reports of the daily press have indicated, have been forced to cross the "Styx" when preventive means existed which the members of the medical profession could have utilized, had they taken advantage of the statements and facts freely presented to them. It may not be entirely truthful to state that the medical profession in America is ultra-conservative regarding the use of "new methods," in the face of the wild furor over tuberculin, or the Brown-Séquard elixir. The latter quickly settled itself, and the former the best authorities now appear to discredit as anything of a specific for tuberculosis. How has it treated forced respiration, in its success an entirely American idea, and which from the first intelligent application gave results that could not be questioned by even those inclined to be jealous and unfriendly? It has not even been made the subject of special comment in the medical institutions of the day; so that the graduates in medicine of but few colleges in the land are intelligently qualified to carry it out, and medical practitioners are not prepared to use it or apply it when supplied with the apparatus. This was quite interestingly demonstrated in a case (No. 25) which was presented not long since, at a time when I was unable to attend, and sent my young nephew with the apparatus to assist two regular practitioners in the saving of a human life from opium narcosis. Although both residents of my native city, and the methods of forced respiration being very simple, these gentlemen were not sufficiently well acquainted with the simple details of the apparatus to use it intelligently. My student, a young man about 16 years of age, having seen it frequently in use, assumed charge, and saved the lady by his efforts. I only speak of this to show that simple methods require more or less study and consideration on the part of any one, even capable physicians, who desires to use them intelligently; and I deprecate most fully the assertion of Horatio C. Wood, that any method upon which the life of a human being may hinge, may be used by "unskilled persons." Simple as forced respiration may be—and in this consists its greatest value to mankind—the saving of the life of many human beings has been accomplished in my hands, only by the skilful use of an apparatus specially adapted in detail for use upon man, and through practical knowledge which it has taken me some years to become satisfactorily acquainted with.

Another instance which indicates that medical press notices and publication in State Association Transactions will not suffice to impress upon the profession the value of forced respiration as a life-saving factor, was instanced in the case of Carlyle W. Harris, convicted of the murder of his young wife, Helen Potts, through the administering of morphia in fairly large doses. In one report of the case, it is claimed that young Harris desired or suggested to the physician who was attempting to resuscitate the young woman, that he make tracheotomy, having a vague idea only of its use. The physician appeared to know nothing about the method. In this one instance I have no hesitancy in stating that the life of the young woman could have been saved by my method of forced respiration, and in the event of the execution of Harris, we will have to record two lives lost through what will be some of these days almost criminal ignorance of physicians.

The public press is almost daily recording cases of death from narcotic poisoning or from drowning, in which the old methods have failed. Why not try something better, which has succeeded time and again where they have failed and must frequently fail?

Regarding the question of originality of my methods, I wish to again pay my respects to Prof. H. C. Wood, as he has given the impression through his statements before the Berlin Congress, that the apparatus I used was similar to that used in the laboratory upon lower animals, so that Dr. John O'Dwyer, of New York, has given public utterance to the statement which Dr. Wood first, and I think unwarrantably, urged. In an article in answer to Dr. O'Dwyer, on the improved method of performing artificial respiration (see *Archives of Pediatrics*, May, 1892), I show nine marked practical features of difference between the apparatus which I have used successfully and the laboratory apparatus with which I saved my first life by forced respiration. I quote from my answer as follows:

"That used in my laboratory[1] before I devised my forced respiration apparatus for use upon man, consisted of a large foot bellows, a rubber tube to connect it with a large brass tracheotomy tube supplied with a valve, which had to be turned by hand to let the air pass into the lungs, and turned in the opposite direction to let it pass out.

"With this arrangement, each time the valve was turned, for the inspiration as well as the expiration, the trachea was given a wrench. I have found that it makes a great difference whether you are wrenching the trachea of a dog or a living human being. I overcome this feature of the laboratory apparatus by making my tracheotomy tube and the valve which controlled the air column in separate parts, connecting them by flexible rubber tubing. This would permit the patient to move about without endangering the trachea. This may be noted as the first feature differing from the laboratory apparatus.

"In the laboratory apparatus the trachea had to be ligated around the tube as Dr. O'Dwyer states, but *not so* in my apparatus. To prevent this, I screw to the tracheal end of the tube a larger or smaller ring, according to size of the trachea, which fills up the trachea, preventing an excess of air passing out by the side of the ring.

"This is the second novel feature of difference from laboratory methods.

"Again, I made the connection between the flexible rubber tube and the tracheotomy tube so that it could be easily and quickly disconnected. This is an important feature, and constitutes the third feature of difference between my own and the laboratory methods.

"The valve which controls the air also has some valuable features. 1. With it, the air can pass into and out of the lungs at all times, except during the forcible inspiration. Fourth and fifth differences from that of the laboratory apparatus. 2. The air from the bellows is constantly passing through the valve during expiration, thus allowing the air to immediately enter the lungs from the air valve when the piston is pressed down, without traversing the whole length of tube from bellows. Also, by the removal of the thumb from the piston of valve, the expiration takes place immediately, without any counter air current from the bellows. With this arrangement, auto-respirations can be assisted instead of interfered with, a factor of importance in many cases I have met with.

"This makes the sixth and seventh differences between my apparatus and that used in the laboratory.

"In the construction of the bellows I used a diaphragm of rubber dam (now a double bellows without perishable rubber), which equalized and produced a steady, instead of an interrupted or jerky column of air, such as Prof. H. C. Wood provides in his so-called 'cheaper apparatus,' with common bellows. Here we have the eighth difference between my own and the laboratory apparatus.

"If I wish to present still more features of difference, I might include the air heater, which I also have practically used upon cases of resuscitation of human beings. The eight features of difference mentioned above will, I trust, put a *quietus* upon the question of similarity between my own and the laboratory apparatus. What I have accomplished has resulted from *careful attention* to the details of *practical import* associated with an operation which holds human life in the balance, not by *slipshod* methods which have in the past relegated this operation to oblivion, and which methods some are now trying to revive. If the saving of eighteen human lives, the record of results with which my work must so far be credited, is not an argument in support of my statements, what 'under the stars' does or will give credence to human utterance? However, I have overlooked another similarity between the laboratory apparatus and my own, the face mask. Of course the face mask, every one will admit who knows nothing about it, was used in the laboratories in the days of Galen. Without joking, however, this constitutes the ninth marked difference between the laboratory apparatus and my own, and yet Dr. O'Dwyer does what appears to me an injustice, in speaking of the two as being identical. I desire to state that, notwithstanding an experience in laboratory vivisection work for eight years prior to my first operation of forced respiration upon man, it was not until this first operation that I was enabled to conceive its great value. All my experiments, the gradual unfolding through operations upon living human beings of the value of the face mask, should give weight to my words above those resulting from *experimentation upon dogs;* the conditions are very different. All that experimentation *upon dogs* has revealed as to the value of forced respiration in saving life I had previously demonstrated upon living human beings; when I began my work it was not even known that it would save a dog's life. Now a few words with reference to the evolution of the face mask. I had begun the operation of tracheotomy upon one of my patients, when my attention was called to the fact that he was dying, the dilatation of asphyxia taking place. I immediately placed the tube of the apparatus in his mouth, closed the lips about it, and compressed the nostrils; inspiration then being produced, I was pleased to find the purple deoxygenized blood in the tracheotomy incision change to a bright scarlet. I had many demonstrations of this character following, which gave me the idea of the face mask. Having a rubber cup used for cupping purposes, I fitted it to the face and saved several lives with it without tracheotomy before preparing the one I now use."

While the description of an instrument may appear somewhat detailed, and indicate that the method in operation is somewhat difficult, such in this instance is not the case. All there is to forced respiration is the forcing of air under suitable pressure and control, with proper periodic intermission, into the lungs. It can only be properly done with suitable apparatus. The simplicity of the method should give to the operation its widest range of usefulness; but to become practically acquainted with it one must see it, and study it before he can understand it. With proper instruction, the members of a life saving, or a ship's crew could be taught to utilize this valuable method of saving human life. I presume before the "conservative" (?) medical profession of America will utilize this method, that thousands of its members must have their attention *specially* called to cases of resuscitation through its employment.

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[1] Medical Department Niagara University, Buffalo, N. Y.

Another matter I may refer to at this time: I believe all will admit that the greatest credit which it is possible to obtain as the originator of a method of wide range of applicability in saving human life, consists in the largeness of the list of lives saved by it, and the just appreciation of its value by your fellow man. There is no higher aim that we as physicians can conceive, than that of preventing the vital spark from taking leave of the human organism. If this be true, it does appear unjust, unfair and unthankful that credit should be withheld from those who are entitled to it, and the medical world, in any section, use these methods without the greatest care in giving to those justly entitled, the credit due them.

This is the only payment which the profession allows those who accomplish results of *value* in fields unexplored. On this account, therefore, the original labors of physicians should be guarded with the utmost care in all sections of the globe. The following quotations (with additions) from a paper presented before the last meeting of the New York State Medical Association, will explain my reason for the above remarks:

"Through the kindness of Dr. Thos. H. Manley, of this Association, I am enabled to refer to an article in the Proceedings of the Paris Academy of Medicine, under date of June 2, 1891, in which Dr. J. V. Laborde, in a discussion on 'Anæsthesia' regarding the dangers of chloroform narcosis, recommends forced respiration, and has devised a face mask with which to perform the operation. This face mask is of metal, with the edges surmounted or faced with rubber, and includes the nose and mouth. It is, to 'all intents and purposes,' similar in detail to the one I have been using for some years, and with which I have saved a number of lives. Dr. Laborde speaks of his invention as novel, of great future value, declaims on the subject never having been brought up for discussion, etc. All the members of this Association, who have been acquainted with my work for the last four years, will agree that our Paris physicians can well afford to look Westward to learn that progress is not confined to Continental Europe. It is quite strange, also, that Dr. Laborde has overlooked the statements of Prof. Horatio C. Wood, in his address on 'Anæsthesia' before the Berlin Congress, 1890, in which he distinctly calls attention to my face mask, and which I had been using for two years previously.

"I am also astonished by the statement in the Paris Academy report, that noted French physicians have been using my method by tracheotomy with remarkable success, and without giving any credit for its practical introduction to the world from this side of the Atlantic.

"At the Paris Exposition of 1888, which had a department to illustrate life saving methods, one of my instruments was exhibited by Mr. George M. Bailey, of Buffalo, N. Y., who, having witnessed the remarkable case of Julius Barre, in which instance I respired twenty-four hours for my patient before he was able to breathe for himself, requested, in the interests of progress, the privilege of taking it abroad. He had with him reprints of my articles published in the Transactions of the New York State Medical Association, which were distributed among some of the physicians and jurors interested officially in the Exposition. At *that time*, through ignorance of the value of my method, they took no notice o my work as being worthy of note as a life saving invention. Even the representative of the United States Government at the Paris Exposition did no see anything of value in it, although no more remarkable cases are recorded in the annals of medica science than some of the first reported in my memoir *which were placed at the command of these gentlemen*, but possibly not given the attention they deserved; but appropriated it, utilized it, and no claim originality for methods which I had previousl used and first recommended in practical shape to th medical world."

The last case reported to this Society illustrate that forced respiration may be utilized as a tiding over measure, and was reported in THE JOURNAL o the Association July 11, 1891. A number of interesting cases have taken place since, which are briefl described as follows:

Case 20.—In the surgical clinic of Dr. Hal. C. Wyman Detroit Emergency Hospital Reports, reported by Dr. Robert S. Linn under Fell's Operation for Morphine Poisoning as follows:

"Miss C., æt. 21. Had taken 20 grs. morphiæ sulph. abou one hour before ambulance was called. Her condition whe brought to Emergency Hospital was critical. Pupils wer *much contracted, and did not respond to light. Respiratio were only five a minute and pulse quite weak.* The stomac was evacuated of its contents with stomach pump, and abou one pint of strong coffee injected into it. About 16 ozs. urine were drawn from the bladder. A hypodermic inje tion of atropiæ sulph. (grs. 1-60) was given, and artifici respiration performed without benefit. An incision 2 inches long was made in the median line over the trache *tracheotomy performed, forced respiration kept up* f about three hours, and the life of the patient saved."

Case 21.—Dr. Fell, Buffalo, N. Y. I was called by Dr. E H. Long, to attend a case of opium narcosis in a lady years of age. She had taken a large quantity of gum opiu Respirations shallow, fourteen per mihute, pupils con tracted, coma existing. Face-mask applied, and use about eleven hours, when tracheotomy was made, but t late to save the patient. Convulsions set in, and conti ued uninterruptedly until death ensued. A mistake w made in this case in not performing tracheotomy earlie With the face-mask the cyanosis was not satisfactorily ove come. Extension of the head, which was used with succe for a time, had finally no influence in raising the epiglot A ligature through the tongue, by which the base of t tongue was raised, worked better. The cerebral hemispher were greatly congested. Free venesection would have bee beneficial if performed in season. The indications for trach otomy existed for some time before it was made.

Case 22.—Dr. Fell, Buffalo, N. Y. I am under obligatio to Dr. Allen A. Jones, Instructor in Practice, Medic Department University of Buffalo, by whom I was called, f the following report of this case, in which the face-mas demonstrated again its great value in a typically approp ate case:

"About 4 o'clock on the afternoon of Thursday, October 1891, I was hurriedly summoned to the house of a form patient, and found her lying on a sofa unconscious,extreme cyanosed, her lips and ears being blue; her pupils were co tracted almost to pin points, and her respiration was of t Cheyne-Stokes character, ceasing entirely for two or thr full minutes, *then coming with peculiar groanings* a whistlings which died away until respiration ceased.

"I had been told over the telphone that she had tak morphine, but I did not know how much.

"Her pulse was frequent and small, but yet of go strength when I first arrived. I sent for Dr. George E. Fe without delay, with instructions that he should bring h apparatus for performing artificial respiration.

"While awaiting his arrival, with the help of those abo me, I succeeded in restoring some color to the lips by ar ficial respiration (Sylvester's method). The pulse gre weaker and weaker, and the heart almost ceased beati before Dr. Fell arrived.

"It was impossible to give emetics per orem, so we gave one-fifth of a grain of apomorphine hypodermically, as soon as Dr. Fell arrived. Then with the patient on a table we instituted forced respiration (by face-mask).

"The patient's lungs filled easily and well without tracheotomy.

"We breathed for her steadily for about one hour, and then she moved her hands to her face and opened her eyes. Her cyanosis had entirely disappeared, and good oxygenation was manifest. The face-mask was taken off, and the patient breathed for herself in a long, slow, sighing fashion several times, but ceased entirely at the expiration of a few minutes. The lips turned blue once more, and she would inevitably have died had we not recommenced forced respiration again. Very soon she was again able to breathe alone, and temporarily stopping the forced respiration, we gave her mustard water, and she vomited profusely. We repeated the mustard water, but she did not vomit; her head fell back, respiration ceased, and again she was turning blue when we applied the face-mask and used forced respiration for the third time.

"After a short time we succeeded in inducing her to swallow another large cupful of warm water and mustard with a teaspoonful of salt in it, with the result that she emptied her stomach completely.

"As is common in conditions where the respiratory center is benumbed, emesis seems to stimulate the centre, and respirations were more willingly taken. Even at this junction, however—being about two and one-half hours from the time that forced respiration was commenced—she would certainly have died had it not been continued, as it was, altogether for four hours. At the expiration of that time, she breathed herself seven times in the minute, and in the morning her respirations were 20, her pulse 80, temperature 101.

"Dr. Herbert U. Williams, who kindly remained all night with the patient, stated that the pulse gradually fell, and the respirations gradually increased, from hour to hour, that he gave her a hypodermic of atropine (1-150 of a grain), of strychnine (1-60 of a grain), and of tincture of digitalis (15 drops) about 11:30 P. M. At 1:30 A.M. she had a cup of strong coffee, and a glass of warm milk at 2 A.M. At 2:30 A.M. she urinated freely.

"This patient said she took eleven grains of morphine dissolved in a glass of water at 1 o'clock on the 8th. I saw her at 4 P.M.; Dr. Fell arrived about 4:30; we performed forced respiration until 9 o'clock with the result that the woman's life was saved.

"I am convinced that ordinary artificial respiration would not have saved her life, and I cannot speak in too high praise of Dr. Fell's effectual and simple apparatus for forcing such a patient to breathe, if necessary, for many hours in succession. I think more physicians ought to possess and have in readiness Dr. Fell's apparatus, and many lives would be easily saved, where now they are lost because no such facility is at hand.

"It is interesting to note in this case that diplopia existed from the return of consciousness on Thursday evening until sometime Saturday morning: and for four days the patient thought a cup of food, or whatever it might be, in her hand was held at the lips, when in reality it was four inches from them, and at first she poured out milk and tea upon her dress."

Case 23.—December 1, 1891. Called to Erie County penitentiary by Keeper Albert H. Neal. Geo. C. W., a prisoner, had taken tincture of opium, 3 oz., and a quantity of sweet spirits of nitre, with suicidal intent at 1 P.M.

Grains .1 apomorphia hypodermically administered by Drs. Fohl and Hays, resident physicians, produced vomiting. I reached the case at 3:10 P.M. The conditions usually produced by the poison were present. After about one half hour's forced respiration work per the face mask, the cyanosis prevailing passed away; heart action became stronger, and patient became conscious at short intervals of time. This condition prevailed under forced respiration for some four hours, then auto-respiration ensued. The stupor was unusual, and I ascribed it to the intense congestion of the encephalonic vessels. Death I believe has been caused in several of my cases by this condition. At my request Drs. Fohl and Hays removed 4 oz.. of blood from the left arm with quite satisfactory results, relieving the congested state, and aiding I believe very much in the saving of the life of the patient. This patient was put to bed before I left the case, and was apparently on the fair road to recovery. Some few days later to my great surprise I noticed that he died of heart failure. I had not seen him since my operation, although informed that he had progressed favorably until the time of his death, which occurred suddenly. The next case indicates, as this does also, the importance of sustaining treatment and careful watching of the patient for a few days at least following the operation.

Case 24.—Mr. C., a resident of Niagara street, Buffalo, a man not habitually accustomed to drink, came under the influence of liquor under peculiar circumstances, and is said to have taken 2 oz. of laudanum. He was taken by the ambulance to the Fitch Hospital, and treated in the ordinary manner by the surgeons in attendance at the hospital, but with unsatisfactory results. The wife and brother-in-law were called about 11 P.M., and they were informed by the physicians in charge that there was no hope for the patient; that everything had been done that was possible to be done. At the urgent request of the wife of the patient I was called about 11 P.M. I found the patient in a very precarious state, totally unconscious, and in danger of death supervening quickly.

I applied the forced respiration apparatus with favorable results. The cyanosis was overcome, and after some four hours' work the patient became conscious, respired for himself, and at 6:30 in the morning was taken to his home in the ambulance. A condition of stupor continued at his home for a number of days following the operation; he did not seem to improve as rapidly as was the custom until he was taken to a neighbor's house, when it was noticed improvement was rapid. He had been placed on stimulating and supportive treatment, but with apparently very little success. It was noticed, however, that there was quite an escape of natural gas at the stove connection in the room in which he lived, and very much of his slow recovery must be attributed to this, as after removal from the house he recovered very quickly, and on the leak in the pipe being repaired he was not further affected, and made a good recovery. This case illustrates the importance of hospitals being provided with an apparatus suitable for performing forced respiration. Had it not been for the special request of the wife of this gentleman, who was very devoted indeed, there is no question but that he would have died under the treatment used by the physicians at the Fitch Hospital. All had been done that artificial respiration or ordinary methods would accomplish, and yet within four hours from the time I was first called to see this patient he was placed out of a dangerous condition. The question arises whether, with such facts presented to the profession any hospital in the country is justified in not being prepared for cases of this character, which may at any time be presented to them.

Case 25.—Mrs. W., of Ellicott street, Buffalo, took an overdose of morphia. I was sent for, but was unable to attend owing to illness, and sent my apparatus in charge of my office student, a nephew 17 years of age. The case was reported as hopeless under the ordinary treatment, but quickly succumbed to the forced respiration per face mask. and made a good recovery. (See remarks page 130.)

At the next meeting of this Association, I expect to be able to present steam and electrical apparatus available in forced respiration and demonstrate with artificial lungs the various points urged in my papers upon this subject.

I would be pleased to have reports of cases which may occur sent to me at Buffalo, N. Y., and will incorporate them in my general report giving full credit to whomsoever will kindly act on these suggestions.

THE LOUISIANA STATE MEDICAL SOCIETY at its recent meeting elected the following officers: President, J. B. Elliott, Orleans; Vice-Presidents: First Congressional District, P. E. Archinard, Orleans; Second Congressional District, A. W. DeRoaldes, Orleans; Third Congressional District, A. J. Perkins, Calcasieu; Fourth Congressional District, J. W. Allen, Caddo; Fifth Congressional District, T. J. Turpin, Madison: Sixth Congressional District, J. S. Branch, Avoyelles. This committee on nominations recommended that New Orleans be made the permanent meeting place of the State Medical Society, and that the second Tuesday in May, 1893, be the date of meeting, and *furthermore, that the* secretary and treasurer be paid an honorarium of $150 in recognition of their faithful services.

THE degree of LL.D. was conferred on Dr. John M. Keating, of Philadelphia, by Seton Hall College.

THE NECESSITY AND BEST METHODS OF REGULATING THE PRACTICE OF MEDICINE.

Read before the American Academy of Medicine, at Detroit, Mich., June 6, 1892.

BY PERRY H. MILLARD, M.D.,
HONORARY MEMBER OF THE AMERICAN ACADEMY OF MEDICINE, DEAN AND PROFESSOR OF THE PRINCIPLES OF SURGERY AND MEDICAL JURISPRUDENCE, UNIVERSITY OF MINNESOTA.

Gentlemen: In reviewing the question of medical education in the United States the student of history will readily conclude that the facilities afforded pupils of medicine have been painfully inadequate, and that the minimum of requirements in a vast majority of colleges have been well below that standard which affords the public a profession possessing a degree of skill and ability commensurate with the safety of its people. It has been the policy of the authorities controlling these institutions of learning to maintain a standard below recognized safety. In addition to the very low curriculum, the resources of most colleges have been inadequate, and the clinical instruction most deficient. It is but recently that a majority of the colleges in this country have attempted a system of regular laboratory instruction. A study of the causes leading to this dilemma are many; among the most frequent may be mentioned the following: First, the history of pretended medical education in this country covers a period of little more than a century. The people possessing those elements of hurry and restlessness observed in all new communities.

Secondly, it has not been the policy of this government to liberally support university or higher education; a form of education reaching a high degree of perfection in the British Isles and Continental Europe, and embracing in its scope all special lines of advanced instruction, such as law and medicine.

Thirdly, the people being governed by a republican form of government, the policy has naturally been liberal in respect to freedom of action and choice of avocation; not infrequently this policy has been at a sacrifice of the best interests of a credulous public. In a monarchical form of government it is very much easier to restrict or control the action of its people.

Fourthly, in consequence of the late Civil War covering a period of four years, a half million young men found themselves penniless, with limited education and without avocation or a profession. Many thousand had secured a superficial knowledge of the art of medicine and surgery, from their war experience, and naturally, as a result, a horde of brave but uncultured men turned their attention to the profession of medicine. In consequence, the number of medical colleges in the United States doubled in a short space of time, and the list of matriculates increased at a much greater ratio. Notwithstanding the wonderful increase in population and resources of this country, in a period of a few years the proportion of physicians increased far beyond the legitimate demands of the public.

Fifthly, there has been a noticeable absence of that concert of action so necessary between the different schools of instruction to secure uniformity of system in education, or uniformity in the attempts at the elevation of the standard of medical instruction. There has been no restriction to the unlimited multiplication of the number of medical colleges. There has been no attempt to dictate the character of instruction by legislative control. There has been but little attempt to regulate the character of instruction even by the faculties themselves. In consequence thereof, the profession and public in the last few years have been casting about for a means or remedy to avert a disaster that seemed to imperil the very existence of the noblest of the learned professions. It became apparent to the observing and thinking that the profession of medicine was being degraded in its personnel, and but little respected by the people themselves. A condition was fast approaching whereby we were placed in quite as ridiculous a position as is described by Moliere in the fourteenth century. It required but a casual study of the situation at this time, to conclude that but one of two methods were available for the correction of the present evil. The first was, that the power to raise the standard of medical education in the United States was vested wholly in the various faculties of medical instruction and by concerted and business-like action they could readily comply with the most reasonable demands of the profession and the public, and in doing so, not materially injure their own interests in bringing about the much needed reform.

Secondly, that in failure thereof, the only alternative was in a resort to some restrictive legislation compelling the various colleges to raise their standard of instruction, both as applying to their preliminary entrance examination and curriculum of professional study. A sincere attempt was made by representatives of a few colleges in a period of time from 1876 to 1882, and there resulted from this effort the lamentable history of the American Medical College Association. The disruption of this Association was brought about by the treachery of a few representatives of colleges whose policy was governed entirely from a commercial basis. The disruption of this Association at the time was considered a great professional calamity, and the friends of higher medical education soon cast about for some method of bringing order out of chaos.

It was determined that the best means of controlling this evil was through efficient medical legislation. As a result members of the profession scattered throughout different portions of the country attempted to secure legislative enactments creating State boards of medical examiners. In a majority of these instances the attempts were met with defeat at the hands of the different legislatures, and a majority of the bills that had become laws were painfully defective, as could only be expected in any new form of legislation. The first act that was recognized as being efficient, and at all restrictive, was that of the States of Illinois and West Virginia. Immediately following we have substantially the same act in force in the States of Missouri, Iowa, Minnesota and Dakota.

This form of legislation permitted men to become legal practitioners by submitting a diploma issued by a regularly chartered medical institution. The act further provided that diplomas may be refused or revoked for unprofessional or dishonorable conduct.

The profession soon recognized and were convinced that the so-called Illinois act, if properly enforced would exercise a wholesome and restraining influence upon medical colleges and rid the public of the infamous practices of the itinerant charlatan. Those of us whose painful duty it was to enforce the above named medical law, know too well, the Herculean task we had undertaken. The barriers seemed insurmountable, and our only solace was the realization that our cause was just.

It was my province to act as Secretary of the Minnesota board for a period of five years, or during the life of the first practice act. This act was substantially a copy of the act now in force in Illinois and several other States.

My experience and observation soon convinced me that we had upon our list of recognized colleges a large number of schools whose alumni were not safe practitioners. Any attempt to discipline these institutions was met in a most belligerent spirit, or by an influence well suited to the ward politician or political black-mailer.

I became firmly convinced that the principle of recognizing the diploma of colleges was not the correct one. I soon agitated the propriety of the amendment or entire repeal of the Minnesota act, or the securing of a new act calling for a personal examination of each and every person wishing to practice medicine in the commonwealth. The propriety of determining the fitness of men to practice medicine by means of a personal examination was recognized and acknowledged to be the proper method by the State Board of Minnesota. At a conference of Boards of Medical Examiners held in Chicago, in 1885, I urged the propriety of concerted action in an attempt to secure uniformity of legislation by an act in the several States, calling for an examination of each candidate for a license and providing, as in the Illinois act, the privilege of refusing or revoking licenses for unprofessional or dishonorable conduct. The concensus of opinion at this conference plainly indicated that it would be a step in advance, if we possessed legislation granting the privilege of examining all students wishing to commence the practice of medicine. The majority of those present, however, were of the opinion that the opposition would be so pronounced as to ensure defeat. The members of the Minnesota Board, however, concluded to ask the legislature for further legislation, and I was instructed to draft a bill for submission at the forthcoming session. The bill was the same as the one now in force in Minnesota and several other States. It became operative with us July 1, 1887. It established a minimum of time to be spent at medical lectures before a person would be permitted to apply for an examination to determine his fitness to practice medicine. It further provided for an examination of all persons wishing to commence the practice of medicine in any of its branches in the State. It likewise granted the privilege to refuse or revoke licenses for unprofessional or dishonorable conduct.

It was the first draft of a bill to become law which called for a minimum of time to be spent at lectures before commencing the practice of medicine. This feature of the bill has proven eminently satisfactory in Minnesota, and has been copied in the statutes of several other States. Its effect has been most salutary upon several of the medical colleges of this country, and as a result thereof, nearly every institution of this country whose term of lectures were less than six months have extended the duration of the same to comply with the statutory requirements of these States. At the present time, parties wishing to commence the practice of medicine in the following named States are required to prove their fitness therefor by undergoing an examination: Minnesota, North Dakota, Montana, Washington, North Carolina, Alabama, Florida, Virginia, New Jersey, New York, Nebraska, Maryland and Utah.

Nearly all of this legislation has been accomplished in a period of the last five years, and the present indications are that in the near future a majority of the States of the Union will secure quite adequate legislation. The agitation of this reform has met with quite bitter opposition from some sources; the principal opposition, however, coming from the authorities of the various medical colleges. This opposition has been most futile, as the situation of the profession in this country was readily recognized by the legislators, and because of the further fact that no rational argument could be rendered against the constitutionality or propriety of some form of restrictive legislation.

The necessity of restricting the practice of medicine has been recognized by all nations of civilized people from time immemorial. Every European country possesses most stringent practice acts and have for centuries. The so-called police power has likewise been recognized for centuries.

Traces of forensic and state medicine are as old as institutions of civil society. The Jews recognized mortal wounds. The Egyptians provided that no woman pregnant with child should suffer afflictive punishment. The Romans even from the period of Numa grounded many of their laws upon the authority of physicians. The Caroline Code, under Charles V., was established in 1532. The first traces of the exercise of police power as applied to the practice of medicine is found in Italy, in 1237. Here a license to practice was granted by the University of Salino after a study of philosophy for a period of three years and of medicine for a period of five years. This license was only obtainable after undergoing a satisfactory examination. Shortly after this date licenses were likewise granted in England.

The first degrees in medicine were presumably granted in 1384. The first efficient law regulating the practice of medicine in England was enacted in 1511. The progress of medicine during the seventeenth century has been ably described by Macauley in Volume 1, Page 310 of his history.

"Medicine," he says, "which in France was still in abject bondage and afforded for Moliere an inexhaustible subject of just ridicule, had in England become an experimental and progressive science, and every day made some new advance in defiance of Hippocrates and Galen. The attention of speculative men had for the first time been directed to the subject of sanitary police." An investigation reveals the fact that efficient regulation of medical practice and higher medical education progressed, hand in hand, from the period of time mentioned by Macauley down to the present time. The courts have universally affirmed the legality or constitutionality of the various laws regulating the practice of medicine in the different countries of Europe. In this country, the United States Supreme Court has recently rendered a decision affirming the constitutionality and general features of medical practice acts. A large number of the Supreme Courts of the different States have likewise affirmed the constitutionality of the different medical practice acts. In a few instances, in the lower courts, where decisions have emasculated the power of State Boards of Medical Examiners, it has been due to the faulty wording of the act itself, rather than to any unconstitutional features that may be found in this form of legislation.

In a paper read by me at the session of the American Medical Association, held in 1888, I advocated a greater uniformity of medical legislation by the various States. This discussion lead to the appointment of a committee, with instructions to formulate the general features of a practice act that would be suitable for adoption in any of the different States of the Union. As chairman of that committee, I submitted the draft of a bill at the next session of the Association possessing the essential features of the act now in force in the State of Minnesota. The report of the committee was unanimously accepted and adopted, together with resolutions urging upon the profession of different States the propfiety of at once attempting the establishment of efficient medical practice acts in the different States of the Union. I am gratified to observe that in nearly all instances where medical practice acts have recently been obtained, the essential features of the Minnesota act have been adopted.

The question of medical legislation should be considered from two standpoints, to-wit: That of the regulation of medical practice, and the regulation of medical education. In the performance of the first function Boards should consider that it is simply their duty to protect the public from the imposition of charlatans, and the grave errors certain to arise from the practices of uneducated men. The duties of the State Licensing Board end here. If the act is so worded as to likewise regulate medical education in the commonwealth, it is eminently proper that a minimum of requirements should be established, and the Boards authorized to exercise a general supervision pertaining to the character of instruction in all colleges whose alumni become applicants for the privilege of practicing in the State. I sincerely question the propriety of one Board performing both of these duties. Basing my opinion upon extensive observation and experience, I believe that the best interests of the public will be subserved by assigning the duties of the State Licensing power to the various State Boards of Health. The Medical Licensing power is purely a police power, and were these duties assigned to Boards of Health, it would assure greater prestige and influence in the community. I believe the regulation of all forms of education should be vested in a central power consisting of a single Board to be known as a State Bureau of Education with power to regulate all educational institutions granting degrees, together with the power of granting charters, and revoking the same; particularly should this apply to all institutions wishing to afford the community any of the various forms of higher or special education. Under existing circumstances, in a vast majority of the States of this country, three or more persons can form a corporation, and become incorporated by application to the Secretary of State and grant degrees *ad libitum*. Of the personnel of these Boards it is immaterial providing the parties be reputable and intelligent practitioners of medicine. It is my opinion that the mixed Boards, such as exists in Minnesota, Illinois, Iowa, Montana, Missouri, North Dakota and several other States of the Union, render better service to the public than in the few instances where separate Boards have been created in compliance with the demands of the several schools of practice. In the States possessing mixed Boards who conscientiously perform the duties of a public servant, I have yet to hear of any clashing or jealousy among the members thereof. I believe the best interests of the people will be subserved by the maintenance of a clause in each of these acts providing for the refusal or revocation of a license to practice when guilty of unprofessional or dishonorable conduct. I question the propriety, however, of Boards exercising this power except in most flagrant cases.

If John Smith is disposed to occupy the first page of a newspaper in calling the attention of the public to the fact that he confines his attention entirely to diseases of the genito-urinary organs, I believe this indiscretion alone should not cost him the right to practice medicine, upon the contrary, should he claim in the public press that he can cure what is recognized by the profession as an incurable disease, such as consumption or cancer, it is the duty of the Board to step in between the credulous public and the dishonorable practitioner and deprive the impostor of his professional rights. It is, likewise, the duty of the Board to refuse or revoke a license for persistent and chronic inebriety, criminal abortion and repeated gross immoralities.

As honorable and intelligent physicians, we recognize the great sin of advertising in any manner. In view, however, of the outspoken sentiment in favor of any restriction in this direction, I presume it is better to allow the fool his course, at least until he reaches that point in his career that his practices imperil the safety of the public.

I am pleased to submit some statistics of the work accomplished by several State Boards of Medical Examiners. My statistics are from States where the law requires a personal examination of the applicant's fitness to practice. These examinations include all the essential branches of the field of medicine. They afford a most convincing argument in behalf of efficient medical legislation.

I trust I may not be considered presumptuous if I assert that in the administration of their delicate and untried trusts, it has been the policy of these Boards to be somewhat lenient, and to license many whom they knew possessed very inadequate instruction. A part of their duties have been to educate both the profession and the public to the propriety of this form of legislation. Notwithstanding this policy we are informed that 24.8 per cent. of all applicants for a license to practice have been rejected as unsafe practitioners.

My statistics are based upon returns from the following named States, to-wit: Alabama, North Dakota, North Carolina, Virginia and Minnesota. Table number one indicates the number of different persons, examined, passed, rejected, percentages, etc. Total number examined 1950; total number classified, 1746; total number unclassified, 204. The unclassified represents foreign and extinct colleges and undergraduates. Total percentage licensed .752 per cent. (Table No. 1 not published owing to space required.)

The following data are compiled from the records of the different Boards of Examiners. The comparison indicates the result of the examinations of graduates of the graded three course institutions and those that previous to 1890 conferred degrees after attendance upon two courses of instruction. The above

TABLE II.

The following table indicates the result of the examination of 183 students, graduates of colleges requiring three courses of instruction before receiving the degree of M.D.:

State.	Univ. Penn.		Univ. Mich.		Univ. Minn.		Harvard.		Chicago Med.		Col. Phys. and Surg. New York.	
	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.
Alabama	10	0	2	0	. .	. .	3	0	. .	. .	6	0
Minnesota	18	0	37	0	53	3	7	0	15	0	8	0
North Carolina	3	0	1	0	. .	. .	. .	. .	. .	. .	4	0
North Dakota	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Virginia	4	0	2	0	. .	. .	. .	. .	. .	. .	6	1
Totals	35	0	42	0	53	3	10	0	15	0	21	1

Total number of different persons examined 183
" " " " passed 179
" " " " rejected 4
Total percentage of persons passed, .972 per cent.

TABLE III.

The following table indicates the result of the examination of 435 students, graduates of colleges formerly issuing degrees upon attendance of two courses of lectures:

State.	Univ. N. Y.		Jefferson.		Rush.		Bellevue.		Phys. and Surg., Baltimore.		Univ. Louisville.	
	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.
Alabama	13	0	15	3	3	1	12	0	12	1	14	4
Minnesota	2	1	5	2	12	9	4	3	. .	. .	. .	. .
North Carolina	34	. .	39	2	. .	. .	17	3	69	25	3	4
North Dakota	. .	1	1	0	. .	. .	. .	. .	. .	. .	. .	. .
Virginia	14	6	20	8	0	. .	11	0	42	15	2	3
Totals	63	8	80	15	15	10	41	6	123	41	19	11

Total number of different persons examined 435
" " " " passed 343
" " " " rejected 92
Percentage passed, .788 per cent.
Difference in favor of Table II, .191 per cent.

colleges were selected, being those indicated by the report of the Illinois Board of Health as matriculating respectively the greatest number of students in the year 1890.

The above tables indicate that graduates of the three course graded colleges rarely fail before the various State Boards of Medical Examiners. Table No. 2 indicates 183 examinations with four failures; table No. 3, 435 examinations with 91 failures. The practice of medicine is fairly well regulated at the present time in about one-half of the States. The present indications are that the wave of reform will extend, and in the near future include all the States. The friends of medical legislation include the masses of the profession and the representatives of the better colleges of the country. Its enemies principally include the representatives of those colleges governed by commercial interests and charlatans.

Up to the present time the number of medical colleges has increased out of all proportion to the increase of population. Of 130 schools, less than a dozen are endowed. The number of practitioners is greatly in excess of the legitimate demands of the people. We are reliably informed that in a period of time ending with the decade of 1890, the colleges of the United States matriculated 115,355 students, and graduated 40,996. This is an average of 4,000 yearly; in my opinion more than twice as many as the requirements of the people demand.

As a final argument in behalf of adequate medical legislation, I beg to submit the following statistics, based upon the proportion of physicians to the number of inhabitants in a few of the European countries:

RATIO OF PHYSICIANS TO POPULATION.

Sweden	1 to 7,000	of population.
Italy	1 to 3,500	" "
Germany	1 to 3,000	" "
Austro-Hungary	1 to 2,400	" "
France	1 to 2,000	" "
United States	1 to 600	" "

The above figures explain themselves and comment seems unnecessary.

Basing my opinion upon observation of the workings of the Minnesota law in its last five years' experience, I am fully satisfied that efficient legislation will reduce the number of physicians to a number commensurate with the needs of the people, and the people themselves be better and more honestly served. Minnesota has a less number of physicians per capita than any State of the Union; St. Paul a less number than any of the larger cities of the United States. The result in this State is wholly due to efficient legislation, and the product of the act has been to enhance the welfare of both the profession and public.

Briefly, gentlemen, my conclusions upon the question of medical legislation can be summarized as follows, to wit: First, The regulation of medical practice and medical education is constitutional, and the demands therefore imperative. Secondly, That a distinct line of demarkation should exist between the so-called licensing power, and the regulation of medical education. Thirdly, That the licensing power should include in every State the following essentials:

a. That the evidence of the candidate's fitness to practice medicine should be established by his undergoing an examination upon all the important branches of medicine.

b. That there is absolutely no necessity for a series of questions that in the least conflict with the views of the various schools of practice.

c. That power should be granted to revoke or refuse license for unprofessional or dishonorable conduct.

d. That the exercise of this power upon the part of the different Boards should only be resorted to in palpably flagrant cases.

e. That the public interests will be best subserved by the so-called mixed Boards.

f. That the power vested is best executed by the State Sanitary Police, or rather, the different State Boards of Health.

g. The duties of the act belonging to that department of law known as the State Police Power, therefore the appointing power should be vested in the Governor.

h. Appointees should be men of recognized ability and standing in the various communities.

4. I am satisfied that the influences of efficient medical legislation will have a most salutary effect upon the character of the instruction afforded the students of medicine in this country, and that the faculties of the various colleges, in the future, will not be so notoriously lax in regard to the conferring of degrees.

5. It is likewise essential that medical education should be restricted or regulated in the various States, and that, in my opinion, there should be created a central authority consisting of a Bureau of Education, that this Bureau should have power to refuse or

revoke charters, and should exercise a restrictive influence as to the character of education, conferred, and that the authority should apply particularly to special schools of education, such as law and medicine.

6. That said Board should establish regulations pertaining to the granting of charters to medical colleges. The charters should not be granted unless all necessary laboratories were thoroughly equipped, that facilities for clinical instruction were unquestioned, and that applicants for charters should satisfy the Board of their undoubted ability to support the institution financially, without being dependent upon the fees of its students for its sustenance.

In a recent report of the Commissioner of Education of the United States, he forcibly directs the attention of the public to the very inadequate equipment of the medical colleges of this country. We are informed in this report that there are two million, six hundred and seventy-two thousand dollars invested in grounds, buildings and apparatus for the medical schools of the United States. The amount of productive funds for these schools is only two hundred sixty-six thousand, one hundred and ninety dollars, and the annual income from investments, only twenty-two thousand. He states "when we examine the facilities and demands of this country with those of the British Isles and Continental Europe, we necessarily conclude that the foreign schools exact too much, or that our system is painfully crude and lax." The Commissioner of Education further remarks, "that considering the enormous amount of knowledge that has been accumulated respecting the proper treatment of disease, its prevention, and its nature, the impression becomes irresistible that we have been influenced by our national impatience and haste in this matter, as well as in many others, and that we have allowed the student to dictate the length of time of study instead of obliging him to spend enough time to receive it properly and retain it securely. Applied to the profession of medicine there is but one inference to draw from the above data, we can only conclude that the facilities for securing a thorough medical education in this country are indeed inadequate. The present high character of the masses of the profession in the United States is not so much due to the facilities of college training, as to the individual character of the profession. The vast majority of the profession of this country, now in practice, received their degrees of M.D. after an attendance upon but two courses of medical instruction, of not more than twenty weeks duration each; many look back upon their medical college career as unimportant epochs, and think of those days as a work of confusion. The instruction afforded under this system of medical education was hurried, superficial and most inadequate to our wants. The course consisting rather in calling the attention of the student to the art of medicine, than to the teaching him of the sound principles upon which is governed the great field of active practice. This system of instruction was a delusion. Our experience confirms us in the opinion, that if the student does not become grounded in the essential principles of medicine in his college days, he never will. Except in a few rare instances a physician does not acquire histology, anatomy, physiology and chemistry, after receiving his degree of M.D. The few that have become proficient in later professional life have been placed at a very great disadvantage.

We are pleased to observe at this time a disposition to foster and support a higher system of education among the masses. The present disposition in the various States of the Union is towards a complete divorcement of the public school system from church or other influences, and affording to the public a system of education fully equal in quality, and as extensive in scope as can be obtained in any civilized country. This disposition is particularly noticeable in several of our Western States. We see here millions of dollars spent annually in the support of university education, and the facilities for instruction in several of these institutions are quite unsurpassed. We already have our University of Michigan, with its 2,800 students; the University of Minnesota, with its 1,300 students, and closely following, that of Wisconsin, Iowa; Texas and Nebraska.

The growing tendency of the State to foster higher education carries with it much encouragement for the profession of medicine. It means a medical department in connection with many of these institutions that are independent, and directly supported by the State. I am pleased to see a disposition in many of our colleges to connect themselves with universities. A medical college connected with a university has few objections and many advantages. As we pass the fourth centennial epoch in our history, we can look forward with most sanguine expectations in all that pertains to medicine. We invite our critics to forget the past and only look to the present and future. Present appearances plainly indicate that we are on the eve of a new departure in medical education in this country. The older system of medical education is a thing of the past; let us forget it quickly and look to the future.

In conclusion, I again appeal to the profession of this country, and particularly to you, gentlemen, the most intelligent representatives of the profession of medicine in America, to renew your zeal and continue in your efforts until the battle for higher medical education in America is actually won, and the good name of the profession of medicine rescued from disgrace.

The State Society of Arkansas elected the following officers at its late meeting: President, J. T. Jelks, Hot Springs; First Vice-President, A. C. Jordan, Pine Bluff; Second Vice-President, J. C. Wallis, Arkadelphia; Third Vice-President, J. W. Case, Batesville; Fourth Vice-President, G. D. Huddleston, Lamar; Secretary, L. P. Gibson, Little Rock; Assistant Secretary, W. B. Lawrence, Batesville; Treasurer. A. L. Breysacher, Little Rock; Librarian, R. B. Christian, Little Rock.

Tri-State Medical Society of Alabama, Georgia and Tennessee will hold its fourth annual session in Chattanooga, Tenn., October 25, 26 and 27, 1892. The membership is not strictly limited to the profession from the States named in the title of the Society, but men of eminence from other States may be elected. Under the vigorous management of its present corps of officers, it is needless to assure our readers that the coming session will be a great success. The mention of the names of Dr. W. E. B. Davis, of Rome, Ga., as President; Drs. D. H. Howell, J. C. Shepard, and J. P. Stewart, as Vice-Presidents; Dr. Frank Trester Smith, of Chattanooga, as Secretary; Dr. W. L. Gahagan, of Chattanooga, Tenn., as Recorder, etc., give sureties of active work and successful results. Papers for the session are already promised by the president, by Drs. I. N. Love, of St. Louis; J. W. Cowan, of Tullahoma, Tenn.; E. B. Ward, of Selma, Ala.; J. M. Head, of Zebulon, Ga.; John L. Howell, and J. N. Masters, of Knoxville, and C. S. Briggs and Richard Douglas, of Nashville.

LAST ONE HUNDRED ABDOMINAL SECTIONS FOR REMOVAL OF OVARIAN TUMOR AND DISEASED UTERINE APPENDAGES.

BY R. STANSBURY SUTTON, M.D., PITTSBURGH, PA.

Medical Attendant.	Patient.	Age.	Ovariotomy. Double or Single	Removal of Appendages. Double or Single	Weight of Tumor.	Descriptive Remarks.	Date.	Place of Operation.	Result.
Drs. Robertson and Floyd	Miss R.	27		Double		Chronic salpingitis and ovaritis. Adhesions. Tate knot	April 26, '87	Private hospital	Recov'd.
Dr. Williamson	Mrs. D.	36	Double		12 lbs.	Multilocular cyst of right ovary. Pedicle tied and burnt. Left ovary cystic	Nov. 5, '87	“ “	“
Dr. Phillips	Mrs. M	27	Single		30 “	Parovarian cyst. Forty square inches anterior abdominal adhesion	Nov. 9, '87	“ “	“
Dr. Floyd	Miss S.	31		Single		Left chronic ovaritis and salpingitis. Right ovary removed one year previous	Nov. 17, '87	“ “	“
Dr. Boal	Mrs. B.	31	Double		20 lbs.	Multilocular dermoid cyst. Second ovary cystic. Pedicles tied and burnt	Mar. 21, '88	“ “	“
Dr. Sykes	Miss W	32	“		30 “	Non-adherent cyst. Second ovary cystic. Patient very feeble	May 10, '88.	“ “	“
Dr. McDonnald	Mrs. H.	27	Single		25 “	Non-adherent cyst. Pedicle tied and burnt	Oct. 11, '88.	“ “	“
Dr. Ross	Mrs. S.	17		Double		Prolapsed ovaries; pelvic pain; mental aberration. Last cured by operation	Oct. 30, '88	“ “	“
Dr. McDonnald	Mrs. L.	35		“		Unbearable dysmenorrhœa. Ovaries and tubes buried in adhesions. Abdomen very fat	Nov. 3, '88	“ “	“
Dr. Stewart	Mrs. H	20		Single		Left chronic ovaritis and salpingitis	Nov. 7, '88	“ “	“
Dr. Purington	Mrs. S.	58	Single		30 lbs.	Ruptured multilocular cyst. No adhesions. Drainage	“	“ “	“
Dr. Williamson	Mrs. McC.	21		Double		Married two years; sterile; [illegible] convulsions. Salpingitis	'88.	“ “	“
Dr Rough	Mrs. R.	33		“		Sterile; had had pelvic ab- [illegible] had been recommended by me, five years previous, when single	Dec. 1, '88.	“ “	“
Drs. Porter and Fish	Mrs. H.	26		“		In bed greater part of time for five years. Pelvic abscess one year before	Dec. 3, '88.	“ “	“
Dr. Williamson	Miss P.	23	Single			Imperforate vagina; infantile, unicornuated uterus. Normal ovary and tube on right side. None on left	Dec. 11, '88.	“ “	“
Dr. Bell	Mrs. B.	46	“		8 lbs.	Cysts on both sides; left pediculated. Right malignant	Feb. 18, '89.	“ “	“
Dr. Sloan	Mrs. G.	50	“		25 “	Multilocular cyst. Pedicle tied and burnt	Feb. 19, '89.	“ “	“
Dr. Hunter	Mrs. A.	24	“		5 “	Tumor. Extensive adhesions	April 7, '89.	“ “	“
Dr. Stewart	Mrs. H	21		Single		Right ovaritis and salpingitis; 2nd operation	“ 15, '89.	“ “	“
Dr. Klingensmith	Mrs. L.	23		Double		Had had pelvic abscess, pelvic peritonitis, menorrhagia. Ovaries and tubes adherent.	“ 27, '89.	“ “	“
Dr. Williamson	Mrs. H.	25	Double		10 lbs	Parovarian cyst. Second ovary cystic	May 7, '89.	“ “	“
Dr. Clark	Miss S.	27		Double		Ovaritis and salpingitis. Pedicle tied and burnt. Drainage	“ 9, '89.	“ “	“
Dr. O'Brien	Mrs. B.	29		“		Gonorrhœal salpingitis	June 12, '89	“ “	“
Dr. Sutton	Mrs. A.	30		“		Long, persistent pelvic pain. Pain cured, but cause undetermined	“ 22, '89	“ “	“
Dr. Robinson	Mrs. M.	29		“		Uterine hæmorrhages and great pelvic pain. Ovaries and tubes adherent. Not cured	July 8, '89.	“ “	“
Dr. Simpson	Mrs. W	28		“		Sterile; ovaries cystic; chronic salpingitis	Sept. 10, '89	“ “	“
Dr. McCard	Mrs. A.	41		“		Bleeding fibroid. Subsequent reduction in size of tumor	Oct. 6, '89.	“ “	“
Dr. Ackerman	Mrs. L.	29		“		Pyosalpinx	“ 19, '89.	“ “	“
Dr. Patton	Mrs. S.	28	Single		15 lbs.	Multilocular ovarian cyst. Ligatured	Nov. 2, '89.	“ “	“
Dr. Williamson	Miss B.	36		Double		Bleeding fibroid. Two hæmostatic forceps left on deep pelvic vessels for 24 hours	“ 28, '89.	“ “	“
Dr. Green	Mrs. M	42	Single			[illegible] ent dermoid; died of shock	Dec. 19, '89.	“ “	Died.
Dr. Waples	Mrs. C.	56	“				“ 23, '89.	“ “	Recov'd.
Dr. O'Brien	Mrs. S.	34	“		20 lbs.	Cyst	Feb. 3, '90.	“ “	“
Dr. Williamson	Miss T.	22		Double		Patient insane; confined in straight-jacket; ovaritis and salpingitis; insanity cured	“ 12, '90.	“ “	“
Dr. Knox	Mrs. S.	37		“		Old pelvic inflammation; appendages adherent to omentum and intestines; drainage	“ 25, '90.	“ “	“
Dr. Storer	Miss H	21		“		Severe hæmorrhages; interstitial fibroid	“ 27, '90.	“ “	“
Dr. Dean	Miss C.	30	Double			Dermoid size of orange, encapsulated by adhesions to omentum, intestines, uterus, tubes and pelvic floor; drainage	Mar. 5, '90.	“ “	Died.
Dr. Pershing	Mrs. B.	41		Double		Old invalid; ovaries and tubes completely embedded in adhesions; drainage; cured.	“ 10, '90.	“ “	Recov'd.
Dr. Blaby	Miss L.	15	Single		35 lbs.	Multilocular cyst; pedicle tied and burnt	“ 22, '90.	“ “	
Dr. Benham	Mrs. B.	51	“		40 “	Fibro-cystic tumor of right ovary; extensive adhesions	“ 23, '90.	“ “	“
Dr. Johnston	Miss McD.	44		Double		Chronic salpingitis and ovaritis	April 9, '90.	“ “	“
Dr. Walker	Mrs. O'T	27		“		Ovaritis, salpingitis and pelvic peritonitis	“ 21, '90.	Home	“
Dr. Stewart	Mrs. H.	60	Single		50 lbs.	Suppurating multilocular cyst; frequently tapped; had phlegmasia dolens	May 3, '90.	Private hospital	“
Dr. Tressel	Mrs. H.	30		Double		Salpingitis and ovaritis	“ 29, '90.	“ “	“
Dr. Klingensmith	Mrs. K.	53	Single			Unilocular cyst; extensive adhesions; stitched incision; drainage; cured	June 2, '90.	“ “	“
Dr. McCready	Mrs. G.	23		Double		Bleeding fibroid; ovaries and tubes diseased	“ 7, '90.	“ “	“
Dr. Sutton	Mrs. S.	43		“		Multiple fibroids	“ 10, '90	“ “	“
Dr. Laidley	Mrs. R.	46		“		Uterine hæmorrhages; interstitial endometritis	“ 12, '90.	“ “	“
Dr. Bell	Mrs. M.	30		“		Chronic neurasthenic invalid; interstitial salpingitis; cured	“ 18, '90.	“ “	“
Dr. Bell	Miss W	22		“		Round ligaments shortened by Dr. Gill Wylie one year prior. N. G. Chronic salpingitis	“ 19, '90.	“ “	“
Dr. Sharpneck	Mrs. B.	46	Single		71 lbs.	Multilocular cyst; Brown's clamp and cautery; drainage	Sept. 4, '90.	“ “	“
Dr. Pollock	Mrs. D.	58	“			Multilocular dermoid cyst	“ 6, '90	“ “	“
Dr. Kirker	Mrs. T.	65	Double			Cancer of both ovaries and omentum; all removed	“ 9, '90.	Home	“
Dr. Banks	Mrs. L.	48	Single		18 lbs.	Parovarian cyst; Brown's clamp and cautery	Oct. 22, '90.	Private hospital	“
Dr. Bell	Mrs. G.	27		Double		Chronic salpingitis and ovaritis	“ 25, '90.	“ “	“
Dr. McComb	Mrs. K.	22		“		“ “ “ “	“ “	“ “	“
Dr. Clark.	Mrs. A.	27		“		Persistent dysmenorrhœa, neuralgia, invalidism; cured	Nov. 7, '90.	“ “	“
Dr. McCready	Mrs. R.	26		“		Chronic salpingitis and ovaritis	“ 10, '90.	“ “	“
Dr. Frew	Mrs. Y.	43		“		Sterile; persistent pelvic pain; chronic salpingitis; ovaries atrophied and adherent	“ 24, '90.	“ “	“
Dr. Simpson	Mrs. W	21		“		Dysparunia, sterile, nausea, amenorrhœa for two years previous; infantile uterus	Dec. 10, '90.	“ “	“

LAST ONE HUNDRED ABDOMINAL SECTIONS FOR REMOVAL OF OVARIAN TUMOR AND DISEASED UTERINE APPENDAGES—(CONTINUED.)

Medical Attendant.	Patient.	Age.	Ovariotomy. Double or Single	Removal of Appendages. Double or Single	Weight of Tumor.	DESCRIPTIVE REMARKS.	Date.	Place of Operation.	Result.
Dr. Banks	Miss McT.	25	Single	.....	....	Soft myoma of right ovary; 65 pints acetic fluid in cavity; drainage; had been tapped 101 times	Dec. 13, '90.	Private hospital	Recov'd.
Dr. Gyer	Miss T.	37	.....	Double	....	Bleeding fibroid	Jan. 3, '91.	" "	"
Dr. Kirker	Mrs. J.	50	Double	.....	....	Ruptured, multilocular, intraligamentous cyst	" 11, '91.	Home	"
Dr. Clover	Mrs. K.	47	Single	.....	....	Cancer of ovaries, liver, omentum and intestines; 4 gals. fluid in abdomen. Operated under protest	Feb. 18, '91.	Private hospital	Died.
Dr. Cort	Mrs. M	32	.....	Double	....	Chronic salpingitis and ovaritis	" 25, '91.	" "	Recov'd.
Dr. Clover	Miss L.	33	.....	"	....	Chronic salpingitis and ovaritis; extensive adhesions	" "	" "	"
Dr. Sutton	Mrs. Z.	28	.....	"	....	Chronic salpingitis and ovaritis	Mar. 4, '91.	" "	"
Dr. Bell	Mrs. S.	26	Single	.....	8 lbs.	Pregnant 3½ months; multilocular cyst of left ovary; gestation undisturbed	April 2, '91.	" "	"
Dr. Clover	Mrs. L.	21	.....	Double	....	Chronic ovaritis and salpingitis; right ovary cystic, left cirrhotic	" 25, '91.	" "	"
Dr. Sutton	Miss A	30	.....	"	....	Dysmenorrhœa; uterus infantile; appendages very small	" 29, '91.	" "	"
Dr. Davidson	Mrs. H	40	Single	.....	9 lbs.	Multilocular cyst of right ovary; adherent [illegible]	....	" "	"
Dr. King	Miss K	42	"	.....	35 "	..	" 16, '91.	" "	Died.
Dr. Engle	Miss A	31	.....	Double	....	Recurrent pelvic peritonitis. Got ovaries; failed to get tubes	" 18, '91.	" "	Recov'd.
Dr. McComb	Miss McM.	29	.....	"	....	Uterus adherent to rectum; ovaries adherent to tubes and glued en masse to pelvic floor	June 6, '91.	" "	"
Dr. Jones	Mrs. D.	35	.....	"	....	Invalidism; chronic ovaritis and salpingitis; cured	Sept. 3, '91.	" "	"
Dr. King	Mrs. McD.	56	Single	.....	50 lbs.	Multilocular cyst; slight adhesions at many points	" 5, '91.	" "	"
Dr. Henry	Mrs. G.	32	"	.....	20 "	Multilocular cyst; slight adhesions	" 12, '91.	" "	"
Dr. O'Brien	Mrs. S.	35	"	.....	12 "	Suppurating, intraligamentous, multilocular cyst of left ovary	" 29, '91.	" "	"
Dr. Van Dyke	Mrs. B.	44	"	.....	23 "	Multilocular cyst; adhesions; short, thick pedicle; tied in sections	Oct. 8, '91.	" "	"
Dr. J. Frank Ross	Miss R.	25	.....	Double	....	Recurrent pelvic peritonitis	Nov. 5, '91.	" "	"
Dr. Potts	Mrs. J.	42	Single	.....	35 lbs.	Intraligamentous, multilocular cyst; also, appendicitis and removal of vermiform appendix	Dec. 22, '91.	" "	"
Dr. Downer	Mrs. S.	62	"	.....	50 "	Multilocular cyst; pedicle twisted three and one-half turns; cyst fluid bloody	Jan. 10, '92.	" "	"
Dr. Hobbs	Mrs. W	21	"	.....	....	Cyst; twisted pedicle; violent peritonitis; cavity flushed and drained	" 14, '92.	" "	"
Dr. Bell	Mrs. K.	31	.....	Double	....	Sterile; chronic ovaritis and salpingitis; adhesions	" 28, '92.	" "	"
Dr. Armstrong	Mrs. A.	30	.....	"	....	Left pyosalpinx; right ovaritis and salpingitis	Feb. 1, '92.	" "	"
Dr. Mattison	Mrs. L.	30	Single	.....	25 lbs.	Multilocular cyst; pedicle twisted; free fluid in cavity; slight omental adhesion	" 4, '92.	" "	"
Dr. McElroy	Mrs. McC.	46	"	.....	28 "	Multilocular cyst; pedicle twisted; cyst rotten	" 27, '92.	" "	"
Dr. Eastman	Mrs. M	30	Double	.....	5 "	Intraligamentous dermoid; 2nd ovary cystic	Mar. 7, '92.	" "	"
Dr. Clagget	Mrs. J.	62	"	.....	....	Cancer of both ovaries; 35 pints acetic fluid. Operated under protest	" 10, '92.	" "	Died.
Dr. Ogden	Mrs. G.	65	"	.....	16 lbs.	Multilocular cyst; died on 14th day of gangrene of lower 3 feet of ilium and entire colon; abdominal wouud healed by first intention	" 26, '92.	Allegheny Gen. Hos.	"
Dr. —, Allegheny Gen. Hosp.	Miss O'H	19	.....	Double	....	Gonorrhœal salpingitis and ovaritis	" "	" " "	Recov'd.
Dr. —, A. G. H.	Mrs. D.	26	.....	"	....	Chronic salpingitis and ovaritis; procedentia uteri; anterior fixation	" 31, '92.	" " "	"
Dr. —, "	Miss B.	19	.....	"	....	Gonorrhœal pyosalpinx; sharp pelvic peritonitis; suppurating peritonitis later	" "	" " "	Died.
Dr. Taylor	Mrs. S.	32	.....	"	....	Chronic ovaritis and salpingitis; very strong adhesions	April 13, '92	....	Recov'd.
Dr. Orr	Miss M	32	Single	.....	1 lb.	Abscess right ovary and mesovarium; pint of pus; discharged frequently per rectum.	" 15, '92	....	"
Dr. Huselton, A.G.H.	Mrs. P.	29	.....	Double	....	Chronic salpingitis and ovaritis, pelvic peritonitis and cellulitis	" 25, '92	Allegheny Gen. Hos.	"
Dr. —, A. G. H.	Miss M.	32	Double	.....	6 lbs.	Multilocular cyst; no adhesions; second ovary cystic	May 4, '92.	....	"
Dr. Gladden	Mrs. P.	72	Single	.....	40 "	Multilocular cyst of right ovary	" 5, '92.	....	"
Dr. Shenkle	Mrs. Y.	45	"	.....	16 "	Multilocular cyst of right ovary; pedicle five inches broad; tied in sections	" 7, '92.	Allegheny Gen. Hos.	"
Dr. Smith	Mrs. C.	26	.....	Double	....	Sterile; chronic ovaritis and salpingitis	" 9, '92.	" " "	"

SYNOPSIS.

In these one hundred cases, which I have the pleasure to report to you, there were:

Fifty-four abdominal sections for removal of diseased appendages with one death, which was caused by suppurating pelvic peritonitis.

Forty-six abdominal sections for removal of ovaries, the seat of tumor, with six deaths, which were cause as follows:

The first, Mrs. M., had been confined a short time previous; was thoroughly septic, having chills, sweats and irregular temperature, pulse ranging from 120 to 130, prior to operation. Died of shock 48 hours after operation.

Second, Mrs. C., the operation was extremely difficult. An intestine was injured, hæmorrhage was profuse, operation was prolonged and vomiting after anæsthesia was uncontrollable. Died from shock 48 hours after operation.

Third, Mrs. K., operated under protest made to her physician and husband together. The operation was completed in a few minutes with moderate loss of blood, and as I predicted, patient died on the table, ten or fifteen minutes after the operation had been completed. There was plenty of time to have her removed from the table, but I refused to have her moved. Her profound neurasthenia was the cause of my protest. Died of shock.

Fourth, Miss K., was operated with phthisis pulmonalis, a sequela of la grippe. Tumor was large.

She should have been tapped and not operated. Died from exhaustion, the result of colliquitive sweats and persistent cough.

Fifth, Mrs. J., a woman 62 years old with cancer of both ovaries, enormously distended with fluid and very much exhausted. I protested against operating. The protest was made to her husband and physician a second time before she was anæsthetized; my judgment was overruled and my prediction that she would die verified.

Sixth, and last case, Mrs. G., operated without difficulty or unusual incident. On sixth day had stercoraceous vomiting with great tympany. I button-holed the ileum in left inguinal region. Distention was relieved and vomiting ceased. Died on 14th day. Post-mortem showed no cause of death attributable to the ovariotomy. No fluid in abdominal cavity. Lower three feet of ileum and entire colon were gangrenous. Died of thrombosis of nutritive vessels. Thrombi were derived from varix as large as an egg situated in scarpal triangle and connected with femoral vein.

Five of these deaths in the forty-six ovariotomies could have been avoided by refusing the cases, which would have been the proper thing to have done. In the future I shall certainly act upon my own convictions, without reference to what becomes of the case afterwards; a position, however, which perhaps only an experienced operator has the right to assume, for all know how frequently the most unpromising cases will survive operation.

PREPARATORY TREATMENT.

The preparatory treatment of these patients, has been about as follows:

The patient is put to bed 48 hours prior to operation, her bowels thoroughly emptied and during the second 24 hours, her diet is limited to nutritious soup, bread and tea. She has had at least two baths at which the cilia about the genitals have been thoroughly cleansed and the vagina washed out with hot water. One hour before operation, a towel wrung out of a hot 1:1,000 sublimate solution is laid over the abdomen and removed on the operating table.

TECHNIQUE.

At the operation besides the anæsthetizer, one assistant and two nurses are used. One nurse has charge of sponges, the other instruments, needles and ligature.

The first stage of the operation, viz: Opening the cavity of the abdomen, varies from five to fifteen seconds. The incision is made in the median line.

The second stage of the operation, adhesions being present or absent, if the case is one of cystic tumor varies from one minute to ten. The average being four and one half minutes. If the appendages are to be removed adherent or non adherent, the time for both sides varies from four to twelve minutes; the average being probably between eight and nine minutes.

The third stages of the operation, the "Toilette de Pentonine" depends largely on whether there are vessels to take up, fluids to wash out or drainage to be applied. The time varies from seven to twenty-eight minutes. The average being probably very close to thirteen minutes. This includes, of course, suturing the abdominal wound.

After the wound has been sutured it is covered with a layer of aristol; this with eight thicknesses of aseptic gauze; this with a thin layer of aseptic cotton, and all this secured by a scultetus bandage.

Neither in the sponges nor in the water covering the instruments and suture, is any chemical introduced. If it is necessary to flush the abdomen it is done with simple boiled tap water.

AFTER TREATMENT.

The after treatment is of the simplest character. During the first 38 hours the patient gets nothing except sips of hot water, and is encouraged to take as little of this as possible. If she suffers from thirst, occasionally four ounces of warm water are thrown into the rectum. Between the 38th and 48th hour she is allowed to take toast water and tea unless her stomach be irritable, in which event she is given a Seidlitz powder,or ʒj Rochelle salts, or a two grain pellet of cloral; the latter if the tongue be furred. At the end of 48 hours, nutritous soups and bread crumbs initiate a more liberal diet a few days later. In very feeble patients, nutritive enemata of peptonized milk are given from the end of the first 24 hours. When it has been necessary to leave the drainage tube in the lower end of the wound, the tube is emptied, and the super dressing changed every two hours until the end of the sixth hour; then every four hours until the end of the first 24 hours and every eight hours from that until the time of its removal, should it be continued beyond 24 hours. If the wound has been aseptic and the vitality of the tissues sufficiently good, no suppuration occurs. If however, this fortunate condition does not exist, about 17 hours after operation the temperature will usually reach a fraction above 100° F., and for the first two or three days will fluctuate between $99\frac{4}{5}$ and 101. Under such circumstances a twenty grain suppository of quinine is given every 24 hours. The wound is examined daily,any offending stitches removed, and usually the result in pus formation is insignificant. It occasionally occurs in a very fat abdomen or in that of a patient extremely debilitated,both conditions predisposing to low vitality,that suppuration will occur to a considerable degree. Early evacuation of the pus, thorough cleansing of the pus cavity or sinus with hydrogen peroxide and subsequent stimulation of its walls with iodized water, with or without the introduction of a small rubber drainage tube, has been followed uniformly by the speedy recovery of the patient.

The average time for laparotomy patients from date of operation is 16 days and the average time in the private hospital is about 23 days.

Increased experience in operating and through this an acquired ability to discriminate justly against hopeless cases as already proven in this table, will, I am confident, enable me to reduce my mortality in the next hundred similar cases to less than seven per cent. Had I maintained my convictions with reference to two of the cases in this table the mortality in the last hundred cases done at this writing would have been but five per cent., and experience has taught me that if a woman who is the subject of phthisis pulmonalis has an ovarian cyst, that it is wise to be contented with tapping. Had this lesson been learned earlier the mortality in this table would have been but 4 per cent. With these considerations I feel confident that the efforts of the future will be better.

SOCIETY PROCEEDINGS.

American Otological Society.

Twenty-fifth Annual Meeting, held at the Fort Griswold House, New London, Conn., July 19, 1892.

The Society was called to order by the President, Dr. Gorham Bacon, of New York. The first paper was by Oren D. Pomeroy, M.D., New York, entitled:

CASES OF MASTOID DISEASE EXHIBITING SOMEWHAT EXTENSIVE CARIOUS PROCESSES.

Case 1.—J. W., æt. 19 years, applied November 22, 1887. In December, 1885, he had a post-aural abscess, which was incised. A few months afterward, the mastoid was freely opened and carious bone removed. On entering the hospital the mastoid opening was nearly closed, and the middle ear was suppurating. There was a swelling below the auricle, red and painful, and preventing free movement of the jaw. Pressure on this part evacuated pus from the tympanum.

November 24, the swelling has extended to the face. Temperature 101.4°, pulse rapid and weak. Nourishment and stimulants used. The patient was etherized, and the granulations in the tympanum were removed by the curette. The opening in the mastoid was extended downwards and opened into a large cavity that seemed to include the mastoid and tympanum. A large quantity of pus was evacuated by syringing. Temperature in the evening 103.6°.

November 25, temperature 99°. Within two days an abscess in front of the velum on the left side was opened. This showed no apparent communication with the ear cavity. During the next three days the temperature was nearly normal, and after this became so. Antiseptic irrigation was continued. After two weeks, the discharge became much less and the carious cavity showed signs of filling up with healthy tissue. The abscess in the throat was probably due to the ear trouble.

Case 2.—M. G., æt. 34 years, admitted February 29, 1890. In December last had acute suppurative otitis in left ear, with mastoid periostitis. Wilde's incision was done. On entering the hospital there was an opening in the mastoid three-quarters of an inch deep, into which the little finger could be thrust, at the bottom of which pulsation was apparently felt. The meatus was filled with dried epithelium and pus. There was elevation of temperature from rheumatism in the left hip-joint. The mastoid cavity was cleaned out and packed with iodoform gauze. Large doses of iodide of potassium were given. Temperature a little elevated in the evening. March 4, easily detachable bits of carious bone were removed with curette and gouge. Temp. 103°, but this was reduced by phenacetine. By March 20, temp. became normal. Stimulants were freely used and the patient became much better, and was able to walk about the wards.

April 7, pieces of carious bone were removed by the bone curette and gouge. Other portions were washed out by the syringe. Considerable granulation material and a cheesy substance were also removed. The part was dressed with iodoform gauze after irrigation with bichloride solution. The patient was discharged April 21, much improved.

Case 3.—T. S., æt. 16 years, came into the hospital August 11, 1891, with an acute suppurative otitis media of both ears. Six days later a Wilde's incision was done on the left mastoid. The discharge continued from each ear when he left the hospital some weeks later.

March 23, 1892, he came under the author's care for the first time. Over the left mastoid was a small aperture leading into a large carious cavity which included the mastoid and tympanum. This opening was enlarged by a stout knife so that the finger could be introduced into the mastoid cavity. Dead bone and granulations were found. On syringing a soft flocculent material, resembling broken down brain substance, was removed in large quantities. Granulations were removed from the drum cavity by the curette. The opening in the mastoid was more than an inch in depth. Antiseptic irrigation was practiced, and cotton smeared with vaseline 5,000 parts and bichloride one part, was applied to the wound. After three weeks, granulations and small bits of bone were removed by the curette. On May 10 an abscess appeared above the meatus and communicating with it. This was opened and found not to communicate with dead bone. It was treated antiseptically and by a compress. June 20, 1892, the mastoid is closed and the discharge from the ear has nearly ceased. He hears words loudly spoken close to the ear.

The right ear in the meantime has filled with granulations which were removed with the curette. On April 8, it was found that pressure on the mastoid caused pus to exude from the meatus and a Wilde's incision was done expecting to find an opening in the mastoid, but none was found. The wound was kept open by a cotton tent. May 9, there was an opening into the mastoid and two or three considerable masses of dead bone were drawn out with artery forceps. This left an enormous cavity which seemed to include the tympanum. Polypi were also removed. There was much hæmorrhage. Antiseptic irrigation was practiced, and vaseline and bichloride on cotton was applied. Since this time granulations and bits of bone have been removed. June 20, 1892, the external wound has closed with considerable sinking and the ear has almost ceased discharging. The temperature has some of the time been above normal and seemed as though recovery would be impossible.

Case 4.—A. W., æt 2 years, has suppurative otitis of the left ear dating back five months. The author first saw her November 1890; when the tympanum was full of polypi. There was a large carious opening in the mastoid which was filled with granulation. Small bits of carious bone and cheesy looking detritus were removed. These were removed and the wound irrigated and dressed with bichloride gauze. Patient was much improved in a few days. After another month more granulations were removed and some dead bone. Four months later, the mastoid opening was closed with considerable sinking. The discharge from the ear diminished after each operation.

Case 5.—J. S., æt. four months had a swelling behind the left ear of four days' duration with a discharge from the ear for one month. A Wilde's incision was made and an opening into the antrum found. There was considerable discharge of pus. Antiseptic irrigation and bichloride gauze dressing. After a few days a probe was passed in one and one-half inches in the direction of the tympanum touching bone. This opening was enlarged by the drill and kept clear by syringing with an antiseptic solution. The patient was brought very irregularly and the treatment was not carried out intelligently and the child died two months later with brain symptoms.

Case 6.—A. P., Italian; æt. 42 years; has an otitis media suppurating since three months with a swelling over the mastoid. The latter was at once incised, and a handle of a scalpel could be thrust through an opening in the cells which seemed to include the tympanum in its area. Antiseptic irrigation was practiced for some weeks. March 22, the temperature was 100.2°. Granulations were removed from the mastoid. On the 23d, there was considerable œdematous swelling about the mastoid which subsided in a few days and the temperature became normal. On March 29, some pain in the side of the head was relieved by quinine. A subsequent headache was relieved by bromidia. More granulations and dead bone were removed. April 18, temperature 100.5° with headache. The next day was better. Being offended he made a serious attack on the nurse. He was then sent to the N. Y. Insane Asylum to be examined as to his mental condition. He was however, soon discharged from the asylum. The patient has recently been heard from and the ear symptoms are not urgent.

Case 7.—A. P., æt 42 years; has a suppurative otitis media on the left side of one week's duration, and a painful swelling over the mastoid since two weeks. Pus was evacuated by a Wilde's incision. A large opening was found in the mastoid extending inward one and one-quarter inches from the skin surface. It was streated by antiseptic irrigation using a hard rubber drainage tube. After four weeks of treatment the external wound was nearly closed but the temperature was 99.6, and a sequestrum of bone was found. There was also apparently some cellulitis of adjoining soft parts, the opening was enlarged and more dead bone removed. After this there was decided improvement and the patient disappeared from observation.

In reviewing these cases it will be seen that no effort was made to remove all the dead bone, but whatever was loose or readily detachable was taken away. Adequate antiseptic drainage was carefully looked after and the vital energies were kept up by stimulants, tonics, food and proper nursing.

(To be concluded.)

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All members of the Association should send their Annual Dues to the Treasurer, RICHARD J. DUNGLISON, M.D., Lock Box 1274, Philadelphia, Pa.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. *All that is necessary is for the applicant to write to the Treasurer of the* Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, JULY 30, 1892.

THE HOT SEASON AND CONSEQUENT AILMENTS.

During the last few days an atmospheric wave of unusual high temperature has passed from West to East over the Northern States, Fahrenheit thermometers marking over 90° for nearly the entire day for more than a week. This is dangerous weather and carries with it a death mark to many houses. The daily press tells of the adults who directly succumb to the effects of the heat, but leaves unrecorded the names of scores and hundreds of invalids and infants whose lives go out as they wilt before the Sirocco. While the immediate mortality has been appalling, the enervating and debilitating influence of the heat will for weeks and months continue its depressing influence.

From this heat will be dated the beginning of innumerable cases of summer complaint, diarrhœa, dysentery, nervous prostration, and mental aberration. The mortality and suffering from these affections may be greatly lessened by timely advice from family physicians.

The knowledge should be made common among the people, that for heat stroke or prostration, the patient whether old or young, should be immediately removed, if in the sun, to a cool and shaded place, the clothing loosened and much of it taken off, and when possible, plunged in a cool bath, or showered with cold water from a sprinkling can; care being taken to remove the patient from the bath, or to stop the sprinkler before the temperature has reached the normal, lest collapse ensue.

Frequent and free baths in cool water cannot be too strongly urged, particularly upon the large population in city tenement houses. These people do not have bath room facilities and accommodations, but they do have ordinary washtubs that answer an admirable purpose as a plunge for the little ones, and a sponge off and ablution for those who are older.

This is trite and elementary information to our readers, but is gone over in order to direct attention to a prophylactic measure that should be urged upon the poor, and particularly upon those who swelter in sweat shops, and similar places.

* * * * *

The prevalence and continuance of summer complaint is in direct proportion to the height of atmospheric temperature, and for this the very best remedies are of the prophylactic order, and of these the knowledge should be made common among the people, and particularly among the poor. In addition to the bathing referred to, a suitable diet and resort to the parks, lake, river, or seaside are absolutely essential for the preservation of much of the child life of the great cities.

For nursing infants, the mother's milk is the best diet in most cases, but not infrequently this is an irritable or indigestible food for the child, and is often supplied in insufficient quantity. A wet nurse is an excellent substitute, but for one reason or another, in a vast majority of instances is not available. The diet that is most convenient and frequently resorted to, is cow's milk. For infant or invalid feeding this should be sterilized as quickly as possible. This may be done by pouring the fresh new milk into a perfectly clean bottle, lightly stoppered with a clean new cork, then place the bottle in a pan or other vessel of warm water, which should be heated to the boiling point and kept there for not less than twenty minutes. A few grains of table salt should be added to the milk. The bottle may now be closely stoppered and set in a cool place.

Milk sterilized in this manner is palatable and wholesome for several hours, or even for a whole day. This simple and inexpensive process can be carried out in any family.

Milk is like a sponge in its power of absorption, taking up the contaminating properties of the surrounding atmosphere with the greatest rapidity; for this reason mothers and housewives should know that its use should depend upon their most careful and immediate attention.

* * * * *

Don't always think that because a mother is an educated woman that she consequently knows enough to frequently give the baby a little drink of cool water. A little at a time and often should be the rule. Many mothers don't know this, but as a substitute place the puling infant at the breast to stop its crying.

All cases that are severe enough to have medication should be under the direction of a physician.

DR. SAMUEL S. ADAMS has accepted the Professorship of Clinical Pediatrics in the Medical Department of Columbian University, Washington, D. C., having resigned from the chair of Theory and Practice of Medicine in the National University of Washington City.

THE FUNCTIONS OF THE STOMACH AFTER GASTROSTOMY.

EWALD has observed the functions of a stomach which has been subjected to gastrostomy, and reports some of his findings in the *Deutsche Medizinal-Zeitung* for March 24. In this case the peptic activity of the stomach was entirely destroyed, and the nutrition began to take place in the intestines. The movements of the stomach were lessened, and a certain amount of stagnation of the gastric contents took place in consequence of adhesions. For this reason EWALD has suggested that the fistula should be made near the pylorus, so that the food, or some of it, can be introduced by a tube directly into the duodenum. So long as a patient's strength is maintained gastrostomy cannot be strongly recommended. The prognosis of obstruction due to pressure from without is much the same as that due to tumor unless the tumor is syphilitic. The stricture may be due to peptic ulcer in the lower part of the œsophagus; this lesion is due to corrosion by the gastric juice and occurs in anæmic subjects. The age is very important. Unlike carcinoma, attacks of pain are noted and obstruction later. The patient upon whom EWALD made his observations was a female, aged twenty, who had previously suffered from gastric symptoms and then had had an interval of health lasting a few months. About one year ago, pain began again, followed by difficulty of swallowing. The bougie could not be passed. There was wasting; no history of syphilis. A gastrostomy was done by OPPENHEIM, the opening into the stomach being made at the end of five days. The patient gained rapidly in weight, but the constriction did not relax sufficiently to permit of the passage of a bougie. The fact of dilatation of the stomach, with delayed passage of food, favored the diagnosis of cicatrized ulcer near the pylorus as well as in the œsophagus. Through a speculum the cardiac end of the organ appeared too red, and the pyloric too pale. The sound could be passed five inches upward and six inches downward, but it could not be made to pass into the gullet or duodenum. The pressure in the moderately filled organ was expressed by EWALD at from 30 to 35 millimetres, and with moderate external compression at from 80 to 100 millimetres. This pressure was increased by applying the faradic current to the abdominal wall, but not by applying the current to the inside of the stomach. This was due to adhesions. Salol excretion was delayed, salicylic acid appearing in the urine two and a half hours after food, owing to stomach dilatation. If the stomach were washed out the night before, a fluid containg free hydrochloric acid and with peptic properties could be obtained on the morning following. The patient survived the operation five months.

DANGERS FROM A MISUSE OF STOMACH-WASHING.

In a recent number of the London *Practitioner*, DR. SOLTAN FENWICK has described some of the objectionable features of lavage, when indiscriminately practiced. In his view of the case, this comparatively new measure has been used more frequently than is just and proper. Not only have chlorosis, atonic dyspepsia and the gastric crises of locomotor ataxia been thus treated, but also not a few cases where the vomiting was of purely reflex origin. Twenty-five cases of convulsions in chronic gastric disease, have been studied by the author. In six of these the attack was apparently due to the stomach-tube. Other irritative causes than mechanical ones may, as is well-known, result in both general convulsions and in tetany, when the gastro-intestinal track is in question, but in several cases observed by the author it was manifest that the stomach-tube was the prime factor of the disturbance. Tetany, from gastric irritation, has been described as a very fatal complication, upwards of sixty per cent. ending in death. Another kind of untoward result, namely the perforation of the wall of the stomach, at a point already thinned by a gastric ulcer, by the pressure of the stomach-tube, has been known to end in a fatal peritonitis. Hæmorrhages have not infrequently followed the use of the stomach-pump, in cases where carcinomatous or ulcerative disease was present.

Three cases of poisoning by boric acid have been found by DR. FENWICK, due to the employment of solutions of that acid as an antiseptic in cases of gastric disease. Two of these cases ended fatally. It is probable, in regard to these cases, that the irrigation of the stomach was carried out in an imperfect or careless manner, so that an unduly large quantity of the acid remained, after the tube was removed.

These "accidents" by no means impeach the use of lavage in the proper range of cases, but they teach the imperative need of watchfulness and judgment in the choice of cases that shall be treated by that method. It will become obvious to others, as it has to DR. FENWICK, that cases not benefited are apt to be made worse, since as LEUBE has pointed out, the tube removes more or less of those products of digestion whose manufacture by the stomach has caused that organ not a little labor. It is not probable that the washing out of the organ, in a case where the digestive secretion is below the normal, will add to or improve its physiological powers. And we cannot justly expect that this procedure can prevent the recurrence of conditions and symptoms which are an indirect result of an organic disease in another viscus outside the stomach. He tried lavage in one case of tabes, marked by severe gastric crises, using it daily for several weeks, but without any good influence over the digestion. In a few cases of anæmia and dyspepsia, failure also resulted in his use of lavage; but these persons, or some of them, began to improve under some of the older and more ordinary lines of treatment. In conclusion he holds that lavage cannot be employed successfully unless employed indiscriminately; that its loose use is liable to prove a curse rather than a benefit, and that not only will some of the patients be made to suffer, but the method itself may be brought into disrepute among those for whom it might satisfactorily be used.

THERMIC FEVER.

A large proportion of cases of this affection are speedily fatal. Those who do not immediately succumb are apt to suffer from a lesion of the nerve centers, for which complete rest in a cool climate, and freedom from mental labor, irritation, exertion and anxiety should be enjoined. Simple tonics, nutrients, salt baths, and laxative waters with hygienic surroundings are indicated. Notwithstanding the patients being placed under the most favorable conditions indicated, very many fail to recover, lose their mental equilibrium, become dead to the world and end their lives as inmates of sanitariums and asylums.

THE AMERICAN SOCIETY OF MICROSCOPISTS.

This Association of scientists will meet at Rochester, N. Y., August 9, 10, 11 and 12.

The volume of proceedings of last year's meeting is exceedingly rich in the character of its contents, and is particularly valuable to physicians. We are pleased to note that a large proportion of the members are medical men.

For the consideration of the American Society of Microscopists we suggest that they hold their annual meetings during the week preceding or following that of the American Medical Association, and at the same place. A Section on Microscopy will no doubt be created in the latter organization, so that a unification of time and place of meeting will be of great advantage to the scientists who are engaged in this fascinating and profitable line of work.

INCOMPATIBLE WITH ANTIPYRINE.—The salicylate of sodium and antipyrine form a mixture from which an oily substance separates. The same is true of chloral hydrate. With beta-naphthol, antipyrine becomes hygroscopic. These changes take place when dry trituration of the respective substances is undertaken.

THE quotation, "Who shall decide when doctors disagree and soundest casuists doubt like you and me," was written by *Alexander Pope, Moral Essays, Epistle 3, line 1.* The original did not apply to doctors of medicine, but to doctors of philosophy. Yours, J. B. H.

ERRATA.—In our last issue, in the book review of McClellan's Anatomy, the name of the first descriptive anatomist was misspelled, it should be Alcmeon.

DOMESTIC CORRESPONDENCE.

"The New York Medical Journal And The American Medical Association."

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

In the ASSOCIATION JOURNAL for July 23, 1892, is a letter from J. F. Jenkins, M.D., having the above caption, in which exception is taken to an editorial on "The American Medical Association" that appeared in the *New York Medical Journal* for July 16. The writer has misinterpreted the spirit of the editorial, apparently basing his misinterpretations on the ground that the editor of the *New York Medical Journal* is not a member of the American Medical Association. While this latter fact is true, it is also true that he takes a lively interest in the welfare of the Association and would gladly see it attain the commanding position that should be its province. But the writer overlooks the fact that in the journal referred to, as in all medical journals, the editor does not write all the editorials. And the member of the editorial staff who wrote the editorial is almost as old a member of the Association as is Dr. Jenkins, and is one who has done whatever was in his power, both as a member and officer of the American Medical Association, to further its interests.

A fair acquaintance with members of the profession in various sections of the United States suggests a classification of the members of the regular profession into, first, those who are indifferent to the Association; second, those who—like the Laodiceans—are neither warm nor cold; and third, those who are favorable towards it. This classification has been arranged in the order of numerical proportion, and it may be verified by referring to the printed list of members of the Association in THE JOURNAL for December 26, 1891, and some register of the physicians of the United States. That class of professional men to whom Dr. Jenkins refers as desiring the destruction of the Association, has not been met with anywhere; it seems as if Dr. Jenkins had echoed an assertion that has been made before, but made on the ground of heated and intemperate expression that ignores the right, not only of a just difference of opinion, but of the privilege of comparing facts regarding various scientific organizations.

An error has unwittingly crept in in Dr. Jenkins' second paragraph. The report of the committee on page 798 of Vol. xviii, of the Association Journal, is not on the Section of Dermatology alone, but on all the Sections, and to all the just criticism of that committee applies. And in order to remedy the deplorable condition of affairs a radical change has been made in the By-Laws governing the Sections.

If Dr. Jenkins will look over the list of members who have attended the last few annual meetings, then look at a list of the members of the Association, and then refer to a list of the members for 1884, say, he will appreciate the justice of the criticism. Let him think over the representative names in American medicine; the men who speak as having authority; the men who have attained their prominence by work in the hospitals and in practice, and not by professional log-rolling! Has the American Medical Association had the majority, or even one-half, or even a smaller proportion of these men in attendance? When thinking of the prominent men who do come, it almost seems as if the Association were under a special obligation to them for their efforts and the lending of their prestige to the Association.

The question of patriotism might arise in a comparison of American and foreign institutions in general; but in science all lands, one's country, and all countries, home, and it savors of evasion to introduce patriotism into a question of facts. Comparison was made with the British Medical Association because its organization is more like our own, and because its journal was easily accessible to institute the comparison suggested if the reader so desired. It is not necessary to attend the English meetings to ascertain the verity of the statement; simply judge by the papers read before each organization. The report of the committee referred to in the first portion of this communication would substantiate the writer's position by itself. But if further evidence is desired, the writer's own experience, during two years that he held office in the Association, in the almost fruitless effort to enlist the coöperation of the best known men in the special work he was engaged in would serve as a basis for all that he said.

The editorial was written, as its tenor purports, to assure the Committee on the Revision of the Code of Ethics that if they would report a recommendation to abolish the entire Code as one of the fundamental features of the Association, their work would be warmly appreciated. It is a firm belief of the writer's that it has not made one man a better man or physician; for, in the language of the Orient, "You can water, fertilize and cultivate a field of thistles for a lifetime and the fruit remains the same, and you can leave a date palm to itself and it will always produce dates;" or in the homely proverb of the Anglo-Saxon, "You cannot make a silk purse out of a sow's ear." The physician who is a gentleman will be one whether the Code exists or no, and the reverse is equally true. Personally, most of the references I have ever seen made to the Code of Ethics have been for the purpose of satisfaction for some fancied wrong, and not from a desire to uphold the dignity and purity of the medical profession.

The existence of the Code savors of Pharisaism, and wrapping its mantle of holiness about us, we are tempted to be more impressed with our own virtue than with the scientific demands of the work upon which we are engaged. We have the example of many organizations before us; and a simple by-law to the effect that any member may be expelled for conduct unbecoming a physician and a gentleman, would eliminate what has been a fertile source of bickering, and bring to the Association many members who cannot be said to be the less gentlemanly, skilful or fraternal because they do not accept the Code of Ethics of the American Medical Association as the rule and guide for their conduct in professional life.

A strong desire to see everything removed that can be alleged to hamper the onward progress of the American Medical Association, was the single stimulus inciting the author of the editorial.

New York, July 25, 1892.

NECROLOGY.

Mr. William Colles, Regius Professor of Surgery at the University of Dublin, died in June, from disease of the heart and debility of age. He was one of the senior surgeons of his country, having entered upon his apprenticeship with his father as long ago as 1826. His father was the distinguished Mr. Abraham Colles, whose name has an imperishable alliance with the wrist fracture that bears his name, and who was the author of some very popular lectures on clinical surgery, early in the present century. Mr. William Colles was the Queen's surgeon in Ireland, and the holder of various college and hospital appointments covering over a half-century.

MISCELLANY.

TREASURER'S REPORT.

Presented at the Annual Meeting at Detroit, June, 1892.

Dr. Richard J. Dunglison, Treasurer, in account with the American Medical Association.

Dr. 1891.		
May 5. To cash balance as per Treasurer's report at Washington meeting	$9,427.21	
May 8. To dues from delegates and members at Washington meeting	3,505.00	
1892.		
June 4. To dues from members to date	10,012.50	
To independent receipts at office of publication, April 1, 1891, to May 15, 1892	12,580.77	
Total		$35,525.48
Cr. 1891.		
May 9. By cash paid J. Harrison White, expenses attending Washington meeting	54.75	
May 9. By Dr. D. E. Nelson, Trustee, expenses of attendance at Washington meeting	64.50	
May 9. By Dr. I. N. Love, Trustee, ditto	71.75	
May 9. By Dr. R. J. Dunglison, Treasurer, expenses of attendance at Washington meeting, telegrams, postage, expressage, etc.	53.04	
May 9. By D [illegible] ıanent Secretary, and Dr. R [illegible] (by resolution of Board of [illegible] f triennial list of members	75.00	
May 13. Dr. D. C. Patterson, Chairman Committee of Arrangements, Washington meeting, printing, rental, etc., $983.50, less donation of committee, $300	683.50	
May 14. By Dr. J. V. Shoemaker, Trustee, expenses of attendance at Washington meeting	40.00	
May 16. By Dr. I. N. Love, Trustee, expenses of attendance at Trustees' meeting, Chicago, May 13-14	54.00	
May 16. By Dr. W. W. Potter, Trustee, ditto	50.50	
May 16. By Dr. P. O. Hooper, Trustee, expenses of attending Washington and Chicago meetings	127.85	
May 16. By Dr. D. E. Nelson, Trustee, expenses of attendance at Chicago meeting	61.80	
May 16. Dr. J. B. Hamilton, Trustee, ditto	57.50	
May 23. By stamped envelopes	87.20	
May 29. By Dr. A. Garcelon, Trustee, expenses of attending Washington and Chicago meetings	143.00	
June 1. By Dunlap & Clarke, printing, 1889-90	3.75	
June 19. By Dr. W. W. Dawson, Trustee, expenses of attending Washington and Chicago meetings	67.83	
July 1. By Wm. F. Fell & Co., printing	15.25	
July 1. By Wm. F. Fell & Co., printing for Permanent Secretary	16.75	
July 1. By annual dues refunded	20.00	
July 1. By Wm. M. Christy's Sons, stationery	8.50	
July 11. By Ward & Barnitz, printing	15.60	
July 28. By Ward & Barnitz, printing	6.00	
August 1. By P. C. Merry, moving books at Washington for Librarian	6.00	
Oct. 20. By Dr. F. Woodbury, Chairman of Section of Materia Medica, etc., printing and stationery	9.50	
Oct. 24. By Dr. D. E. Nelson, Trustee, expenses of attending Trustees' meeting at St. Louis	48.00	
Oct. 24. By Dr. P. O. Hooper, Trustee, ditto	38.00	
Oct. 24. By Dr. W. W. Potter, Trustee, ditto	55.50	
Oct. 29. By Ward & Barnitz, printing	3.10	
Nov. 14. By Dr. E. S. McKee, expenses of reporting Section of Obstetrics	44.00	
Nov. 21. By Dr. John H. Rauch, Trustee, expenses of attending St. Louis meeting	27.50	
1892.		
Jan. 19. By Ward & Barnitz, printing	22.25	
Jan. 29. By Wm. F. Fell & Co., printing for Permanent Secretary	8.50	
Jan. 30. By postage, printing bills, circulars, drafts, etc.; collecting, type-writing, stamped envelopes, P. O. box rent, etc., to date	141.85	
Feb. 11. By Wm. F. Fell & Co., printing	11.00	
March 19. By Ward & Barnitz, printing	28.50	
April 2. By Ward & Barnitz, printing	13.50	
April 2. By Dr. C. G. Comegys, Chairman Committee on Medical Secretary of Public Health, expenses of printing, etc.	83.00	
April 14. By P. O. box rent	3.00	
April 28. By City Trust, Safe Deposit and Security Co., premium for bond of Treasurer, as per resolution of Board of Trustees	50.00	
May 13. By Dr. W. B. Atkinson, Permanent Secretary, expenses, telegrams, expressage, etc., to date	135.48	
May 18. By Geo. S. Davis, subscription to "Index Medicus," 1890-1891	20.00	
June 1. By Farmers' & Mechanics' Bank, Philadelphia, exchange on checks deposited to June 1, 1892	28.10	
June 1. By Drexel & Co., collection expenses on drafts	176.50	
June 1. By amount paid office of publication for expenses of Journal to date	18,171.91	
June 1. Amount expended from its independent receipts by office of publication of Journal, April 1, 1891, to May 15, 1892	12,576.65	
June 1. By balance	2,045.57	
Total		$35,525.48

Detroit, June 7, 1892.

This certifies that we have examined the accounts and vouchers of R. J. Dunglison, Treasurer of the American Medical Association, and find the same absolutely correct.

Alonzo Garcelon,
I. N. Love,
Auditing Committee.

The Journal of the
American Medical Association

VOL. XIX. CHICAGO, AUGUST 6, 1892. No. 6.

AMERICAN MEDICAL ASSOCIATION.

SECTION ON PRACTICE OF MEDICINE.

(Concluded from page 132.)

The next paper read was entitled

DARWINISM AND DISEASE.

BY WOODS HUTCHINSON, A.M., M.D.,
DES MOINES, IA.
PROFESSOR OF ANATOMY, STATE UNIVERSITY OF IOWA.

Before commencing this, to me, extremely interesting subject, I wish to say that I *do not appear before* you either as a full-fledged Darwinist or an expert pathologist, but as a mere dabbler in both, who has *succeeded in raking up, together with much mud, a* few oysters which he thinks contain pearls. Only a moiety of the collection displayed is original, but the *method of arrangement is entirely so*. The subject, of course, is an enormous one and one of which only the merest outlines can be given within the limits of *the time allotted. I fear it will seem to some of you* that setting two such "dark continents" to illuminate one another is much like calling upon one sphinx to explain another, a sort of "blind leading the blind," but as a matter of fact, even the mere inkling of the relations between the two which we have already attained makes pathology with its "magnificent schemes of decay" not only intensely interesting and *alive* but even optimistic and cheerful. I shall not attempt, of course, to define either of these subjects, Spencer's definition of Darwinism—"undifferentiated homogeneity," etc., would alone very nearly take up the time at my disposal. The first thing that might strike us is that Darwinism and pathology have apparently nothing to do with each other, nothing in common. Darwinism has to do with life and pathology with death, or the dead-room at least. But this is merely an apparent distinction, for from the Darwinist's point of view, disease is merely life out of place, life misdirected. Many processes in pathology tend towards somatic death, but death itself requires no process or influence, save that of gravity, is a mere negation, and every disease-process is a vital process on the part of the cell-groups concerned.

Perhaps a very brief outline statement of the Darwinian hypothesis as applied to cell-life would be advisable as a basis for our discussion. Cell-Darwinism may be briefly expressed as follows: That all cells have a constant tendency to vary; that these variations are capable of being inherited by their descendants; that by the action of currounding forces known as "the pressure of the environment," these variations however small, can be so "selected" that those which are of benefit to the individual are preserved and encouraged, or more correctly, that the cells possessing such favorable variations are thereby given an advantage in the struggle for existence. Finally, that by the cumulative effects of inheritance and of use and disuse, useful variations may be indefinitely preserved and developed and useless ones diminished or eliminated.

The first thing that strikes us, in looking at the subject from this point of view, is that the cells are *emphatically "the people."* It is the *insignificant* little citizen-cells of the body-republic which really control the destiny of the whole. Our "Ego" instead *of being a* "lord of creation" is a mere congressman, absolutely at the mercy of his constituents. No matter how each "voter" may have modified himself, he *still has all the possibilities* and caprices of life contained in him. Each of the cells is to be regarded as an individual and entitled to all the rights of such. *Not only so*, but each of these cells has an independent existence and though fortunately their usual action goes to nourish and is in the best interests of, the body, as a whole, yet they have also a perfect right to "life, liberty, and the pursuit of happiness" on their own account. We have been too much inclined to regard our tissue cells as our forefathers regarded all the lower animals, as if *their only excuse* for being, was the use which they might be in supporting our own lordly existences. They have rights *of their own and will assert them if we ignore them* too persistently. Indeed, most of our disease-processes seem to be due to the setting-up of the cell for itself, without regard for the welfare of the rest of the organization. These tiny units have a life-history, pedigree and inherited tendencies and characteristics. Even where individual cells array themselves in such a way as to seem actually hostile, and work great damage to the rest of the body, they are simply carrying out their own life-processes, with the best of intentions, and in many cases these same processes become actual safeguards against the spread of disease. I am convinced, that there is no such thing as malevolent or malignant action, but that on the contrary the majority of disease-processes are life-processes and intended for the service, not only of the cell itself, but also of the rest of the body. If the cells can't do just what they have been accustomed to, they will go on and do the very next best thing.

To illustrate what I mean, I might cite the processes of repair and hypertrophy, which differ only in degree: Let the stimulus or irritant be of moderate intensity and the tissue-elements promptly multiply after their kind, and increased vigor of muscle or resisting power of epidermis is developed, but let it become intense enough to cause destruction and loss of tissue and the cells can only replace part of the loss in perfection. For the remainder, they drop one step in vital rank and fill the gap with mere connective-tissue. This is the ultimate process of aseptic surgical repair, the leucocytes and fibrin merely acting as temporary "adhesive-straps" or as food for the tissue-cells in their rapid multiplication. If the lesion be accompanied by poisons which paralyze the cells or throw them into furious abortive multiplication and at the same time attract the leucocytes in such myriads that they choke and crush one another to death in thousands, then and then only is suppuration with its appalling train of surgical fever (more properly termed "unsurgical fever"), septicæmia, pyæmia, etc., set up. Inflammation is at bottom simply the forced "feeding up" of the cells, for rapid breeding to repair loss. "Whatsoever is more than this cometh of evil." The old pre-Listerian methods of surgical healing, were a good deal on the principle, so humorously attributed by Charles Lamb to the Chinese, of burning down a house every time they wanted to roast a pig.

This life-history and pedigree of our cells, of which we have spoken, is shown by innumerable instances of that curious process known as reversion,[1] the reappearance of traits and qualities peculiar to a more or less remote ancestor, but quite out of keeping in the cells themselves. These may be divided into partial, or local and general, or diffused. The partial may again be divided into Vestigia, or those affecting whole organs or parts, and Degenerations, or those affecting general groups of tissues. We will now rapidly glance at a few instances of the first of these, which are among the most interesting of all the different processes. The first and probably most striking is that curious and interesting rudiment, the external ear. As it at present exists, with its graceful outline and elaborate curves and recesses it looks as if it surely meant something, was there for some purpose; but careful experiments have shown that sound will be received just as well, if it be cut off close to the head and it is immobile so that it cannot be used as a means of determining the direction of sounds by "pricking" it. In fact, it seems utterly useless and is scarcely ornamental enough to account for its presence on that ground alone. What then is the *raison d'ctre* of this curious appendage? Its analogy to the auricle of the carnivora and herbivora is at once apparent. The tiny rudiments of muscle which are attached to it, though now utterly useless and powerless, point clearly enough to its relations in this direction, but for its origin we must go much further back. It is a familiar fact that the human embryo, in the early stages of its development, presents a distinct reversion to its fish-like ancestors, in the form of gill-slits. These, in the shark, where they are found in their greatest perfection, are protected by flaps known as opercula, or gill-covers, and these are the starting-point of the innumerable forms of the mammalian and human auricle. The external meatus is the remains of the first branchial cleft and the auricle, of the flap which covered it. But, someone will say, were not the other gill-slits provided with opercula, and if so, what has become of them? Pathology promptly answers the question. They also reappear, not at all unfrequently, in those curious appendages known as cervical auricles. These are little tags or prominences which make their appearance at various points along the anterior border of the sterno-mastoid, and the possibility of their being mere "freaks" or "sports" is emphatically negatived by the fact, first, that they contain not merely the areolar tissue of the neighborhood but fragments of cartilage and striped muscle and fat, the basal substance of the genuine auricle, and second, by the fact, that they are sometimes accompanied by and always appear at the points of opening of branchial fistula or congenital cysts of the neck which represent the partially closed lower gill-clefts. These may be either closed at both ends, forming cysts, open at one end, forming diverticula, or open at both ends, so that milk taken into the pharynx will ooze out upon the surface of the neck. In some cases these projecting growths will attain nearly half the size of the auricle proper. They are, of course, comparatively unfrequent, but a curious side light is thrown upon their probable frequence in earlier days, by the fact that many of the statues and paintings of those mythical creatures, fauns and satyrs, depict them with well-developed cervical auricles at about the position of the third branchial cleft. They are also comparatively common in goats and sheep, and it seems probable that their appearance in the sculptures and pictures is due to this fact.

These branchial clefts also furnish us with our second instance of reversion. There are situated in the fauces, a pair of little glands, which might be called the Sphynxes of philosophical anatomy. They have no recognized useful function. Their secretion is a matter of question both as to its nature and uses and yet they are one of the most annoyingly frequent seats of disease in the whole body. Our only method of defense against them appears to be the tonsillotome. The recent researches of Harrison Allen have thrown fresh light upon this subject, by showing the two so-called globular glands to be really merely pouches surrounded by glandular tissue, and a little embryological comparison reveals the interesting fact, that they are merely the dilated internal openings of the second branchial clefts, the walls of which have, so to speak, become infiltrated with lymphoid tissue, a process which, as we shall see, is very apt to take place around the extremity of any of these rudimentary fistulæ.

Another of these curious "remnants" is the appendix vermiformis of the cæcum, a structure which had no imaginable useful vocation, but a very active one apparently, in the opposite direction, as a "death trap," and which is the atrophied remains of the enormously elongated cæcum of the herbivora and quadrumana. Here again the same curious aggregation of lymphoid tissue at the end of the passage has taken place, and it is in this, more than in the interior of the appendix itself that the much dreaded perityphlitis or appendicitis takes place. Another illustration is found in those two curious little bodies known oddly enough, both by the name of the same anatomist, Luschka's tonsil in the vault of the pharynx and Luschka's gland at the tip of the coccyx. Time will not permit me to bring forward the evidence upon these points, but it is sufficient to warrant us in at least surmising that the tonsillar body and the anterior lobe of the pituitary body represent the atrophied canal of connection between the intestinal and spinal canals at their upper extremity, while the coccygeal gland together with a number of interesting tumors of this region, containing promiscuously sections of the ilium, even with villi and Peyers' patches side by side with short tubes of well-developed nervous tissue, represents the lower communication. The two tubes are now believed to have been originally continuous, so that the supposed antithesis or antipathy between "guts" and "brains" is hardly so well founded as was once imagined. The condition of central spina-bifida, on this hypothesis, is merely an instance of the familiar cystoid dilatation of an unused canal.

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[1] For a masterly and intensely interesting presentation of this subject, see Bland Sutton's "Evolution and Disease."

Space will barely permit me to mention by name several other of the leading instances of this sort of thing. For instance, wisdom teeth, those reversions to an ancestry which had five or six molars and jaws long enough to contain them; the extra incisors which appear at the edges of the pre-maxillary bone in extreme cases of hare-lip; the process of acne, which is merely an atrophied hair-gland, or as we call it, sebaceous gland, endeavoring to produce its normal hirsute tissue at the period of puperty; the frequency of Pott's fracture of the fibula in spite of the "splinting" effect of the tibia, which seems probably due to the fact that the fibula is a rapidly atrophying relic which may possibly ultimately disappear, as it has already done in equines, bovines and most other mammals. The two bones are of equal size at the third month in the embryo as well as in the manatee and some of the quadrumana. The great preponderance of equino-varus over all other forms of club foot, it being the normal position of the foot not only in our quadrumanous relatives but also in the embryo up to the seventh month. These are only a few of the most important of these partial reversions, for the tip of the forefinger can scarcely be laid upon a single part of the body which will not under some circumstances furnish us with one or more such proofs of our pre-human descent.

We now come to the other form of partial reversion, in which the change is confined to certain tissue groups and is much simpler in its nature, being what we term, merely a degeneration. These are the familiar four, arranged both in the order of their frequency and lack of vitality: The Caseous, Calcareous, Fatty and Fibroid. The first two of these can hardly be dignified by the term of vital process. They are simply the breaking down of the protoplasm of the cell into simpler and less highly-vitalized forms, and yet organic forms for all that. But the second of these is clearly only a form of vital action gone wrong, differing only from bone formation in that the cell dies or withdraws entirely and gives place to the inorganic lime salt instead of arranging it in such a way that it or its successors or appointees can still control the region. In other words, it vacates the premises entirely, instead of merely renting them. In many instances it is in itself a genuine conservative process changing an infective focus into a fixed and harmless foreign body, as in the case of tubercle and some forms of encystment. It also has obvious analogues in the processes of the protozoa and polyzoa, being the method by which the coral insect builds his reef, the globigerina forms the chalk beds and the squid his otoliths.

In fatty infiltration and degeneration we have another vital process gone very wrong indeed. A process which, under normal circumstances, is the very "savings bank system" of the body; protects the delicate centers from every mechanical or caloric shock, lubricates the movements of the muscles, and is simply indispensable as a store-house of energy. It is, however, so easy to form that it is no uncommon thing for higher cells in all parts of the body to produce it instead of their legitimate product, through laziness or enforced idleness, in some cases at the expense of their own protoplasm. If there be a sufficient number of healthy cells in the neighborhood to promptly devour the fat and work it up into fresh tissue, it is in some lights almost a conservative change, but if not, then results of all degrees of disastrousness may ensue. This process may take place outside of the body just as well, as the familiar instances of the formation of adipocere. and the ripening of cheese bear witness.

The highest and most important, and, in many cases, most deadly of these degenerations is the fibroid. Here we have a reversion of a considerably higher character and more difficult of accomplishment on the part of the cells and one, which, in intention at least, would appear to be always conservative, though its results may often be far otherwise. As seen in the formation of scar tissue, in the fibrous envelopes around tubercle, in the wall of abscesses, in the coating of encysted foreign bodies, and in the repair of tendons, it simply is indispensible, but on the other hand where it takes the place of more highly specialized tissues like kidney epithelium or the gray matter of the spinal cord, it is one of the most dangerous and unmanageable of processes. The rationale of its formation is a highly disputed question, but the most probable explanation appears to be that it is an actual substitution by the cells involved of a lower for a higher form of reproductive product. This may be due to almost any form of over-stimulation, whether by over-work, excessive mechanical tension or pressure, or by the presence of a virus, and would appear to be associated with a sthenic condition of the system rather than an asthenic.

We have heretofore been considering diseases in which the process is merely one of degeneration of the cell-protoplasm itself, and has little or no direct connection with the individual vital processes of the cell as a unit. We now, however, have a form of disease which seems to consist of what we might term a reversion of function; a production on the part of the cell of an incomplete metabolic result which was normal in one of its comparatively remote ancestors. There is but one disease of this form, but it is a perfect "Pandora's box" of the evils to which flesh is heir, and that is the celebrated "*morbus dominorum* and *dominus morborum*"—gout, or as it is known at the present day, "Lithæmia." With all its innumerable varieties of manifestions, it seems at bottom to consist in a tendency on the part of the hepatic cells to form uric acid instead of urea. This, of course, as will readily be seen, is merely a reversion to the avian or reptilian stage in the ancestors of the liver cells, in both of which large classes, the elimination of the nitrogenous materials of the food is solely in the form of uric acid; indeed, Garrod remarks that "our gouty patients seem to be a sort of birds." The world-wide prevalence of this tendency has, I think, been very much under-estimated. In spite of the fact that gout is supposed to be, and in its more frank manifestations, unquestionably is, a rare disease in this country, I am satisfied that a large portion of our celebrated national "dyspepsia," most of our "biliousness," all of our lumbago, muscular rheumatism and not a little of our neuralgia are due to this degenerative tendency, to the loading of the blood with the half finished products of the hepatic cells. And, indeed, from the investigations of Fothergill, it would seem probable that the initial change in the terrible Bright's disease itself, is first a hyperplasia of the muscular coat of the arterioles, due to irritation caused by the presence of these substances in the blood, ending, as all over-stimulation will, in fibroid degeneration, the "arterio-capillary fibrosis." If this process be a reversion to the point of departure of two of the largest branches from the main trunk of our family tree, its wide-spread prevalence is readily explainable. The methods which have proved most permanently beneficial in its treatment would appear to point in the same direction, being principally such as will improve the tone of the system in general and the liver-cells in particular, supplying them with abundance of fresh air, sun-light and vigorous exercise. In short, all those means which would lift us as far above the reptilian stage as possible.

We still have a large number of disease-processes, probably the most interesting, to the pathologist, of all the series, which may, perhaps, be best described as "reproductive" reversions. I refer to the so-called "new-growths" or "new-formations," and would arrange them in the following order of ascending vitality and perfection. This may seem a wanton infraction of some of the recognized rules of pathological classification but I am convinced that they are related, at least remotely, in some such way. They comprise: 1, and lowest of all, Tubercle; 2. Gumma; 3. Malignant tumors; 4. Benign tumors; and 5, and highest of all, Hypertrophy, or regeneration. In all these, the essential factor appears to be a tremendous stimulation of the function of reproduction on the part of the individual cells of the group affected, with results ranging in perfection, from the lowest to the highest of the series.

In tubercle, the process would appear to be one of rapid multiplication of connective-tissue cells by endogenous fission—"giant cells"—at various foci, the determining cause apparently being starvation, under-feeding, or mal-nutrition of the cells concerned, thus leading them to rush hurriedly into reproduction, as a means of avoiding extinction, much in the same way as plants, grown in sterile soil, run to seed. Animals hard pressed by their environment appear to become more prolific, and even the human family itself, where the food is scantiest and struggle severest, appears to have the highest degree of fertility. The perfection of most of our improved varieties of animals or plants seems to be dependent largely upon the lateness of the period to which the reproductive act can be postponed. The products of tubercular multiplication, born in a soil already impoverished, remote from the blood-vessels, bear the stamp of their parental weakness and are not only incapable of continued existence, but even of any form of degeneration except the caseous. They can set up fibroid degeneration in the sturdier tissues surrounding them, but all that they themselves seem capable of, is to rot and make a meal of carrion for the tubercle bacillus. What part the bacilli play in this process is hard to determine, but it would seem a secondary one as they do not usually appear until after the tubercular formation has taken place and caseation set in. The enormous frequency of the tubercular process in the human subject—it now being estimated that it occurs in nearly 60 per cent. of all human beings at some period of their lives—the great importance of the pre-tubercular condition, the readiness with which the disease is induced in animals, merely by confinement or starvation (nearly two-thirds of the deaths in confinement of animals being due to this cause), the utter failure of all bactericide remedies and the gratifying results obtained from fresh air, sun-light, high elevation and outdoor exercise at any reasonable stage of the disease, all point in the direction of its being due to some general tissue tendency, rather than to a specific external cause. It might almost be termed the "starvation reflex" of all living tissue.

In the second process, viz., gummatous formation, we have a similar but more violent determination on the part of the tissue-cells in various localities to "be fruitful and multiply" no matter what comes of it. The cause in this instance appears to be a specific virus. It differs in that the formation is much more rapid, is participated in by a larger body of cells, and the resulting product is a stage higher in the grade of vitality. It is capable not only of maintaining its existence, in the form in which we find it, for some little period of time, but also of the comparatively valuable and conservative process of fibroid degeneration. A gumma may result in a mass of scar tissue, a tubercle, only in a caseous or calcareous nodule.

The next rank in order of perfection, is that of the so-called malignant tumors. Here the cells, instead of being merely amœba-like, with simply a capacity for degeneration, bear a more or less ghastly resemblance to the parent cell. If the connective tissue be the starting point, we have the sarcoma, dangerous just in proportion to the imperfection of the offspring produced, ranging from the nearly amœba-like or embryonic "small round-cell," with its intense malignity, to the almost benign "spindle-cell" or "myeloid." If the glandular or epithelial tissue be the starting point, we have the deadly brood of carcinomata, again varying in their dangerousness, according to the imperfection of the spurious product turned out. A cancer may be described as a parody upon gland tissue—and a hideous parody it is. Here there seems to be little difficulty in determining one, at least, of the predisposing causes, and that is, senility of tissue, its having outlived its usefulness. The mammary gland in the female, after the child-bearing period, the uterus at the same period, and the wrinkling, shrivelling lip or baggy eyelid of the toothless old man, furnish an enormous proportion of the cases of this terrible "rebellion of the cells," as it has been well called.

The next class, although of apparently less importance from a pathological standpoint, is quite an extensive one, and includes the so-called benign tumors. Here the reproductive process is orderly and perfect in and of itself, and is merely not in harmony with the demands of the rest of the system. We are utterly in the dark as to the predisposing cause. All that we know is that certain groups of cells in the various parts of the body suddenly commence to reproduce themselves in a perfectly orderly and methodical manner, but without any reference to their result upon the general body system, with which they interfere simply by their bulk or mechanical properties. Here again the frequency is in direct relation to the simplicity, or to the easiness, so to speak, of the imitation. The simplest tissue to imitate on the part of any of the body cells is the fatty, and we find lipomata at the head of the list, both in point of frequency and simplicity. Next, in the same double order, come the fibromata, a little more difficult of production, less frequent, but more dangerous, then the myomata or unstriped muscle tumors, and the more complex but much less common adenomata, with their astonishing mimicry of healthy glandular tissue, and last and rarest of all, because most highly specialized and most difficult of imitation, the neuromata and rhabdomyomata or striped muscle tumors.

The apex of the pyramid is reached by the processes of physiological or compensatory hypertrophy and surgical regeneration, where the reproductive product is not only perfect in itself, but in accurate harmony with the needs of the whole system, the whole series varying in its benignity or malignity in proportion to the remoteness, so to speak, of its reversion. Between the almost universal and fearfully disastrous tubercle, with its mere possibility of caseation, to the gloriously beneficent physiological hypertrophy of the uterus or heart or the every-day miracle of surgical regeneration, it is merely a question of the vital perfection of the daughter-cells.

Would time permit I should like to take up the still more individualized action of the cells in the various forms of leucocytosis in its bearing upon this theory. The whole process of fever and inflammation would appear to be a genuine battle of cells begun by a skirmish-line of leucocyte mounted police and continued by seried ranks of macrophage militia, recruited from the sturdy citizen-cells of the fixed tissues. The wonderful and fascinating process of phagocytosis is a complete epic poem of more than Homeric interest. The extraordinary facts of the immunity-problem prove the eminent ability of the cells of the body to defend themselves against all comers, however evilly disposed, while the singular rhythm of weeks, or lunar months, displayed by the reproductive process, the menstrual functions, the intermittences in the malarial fevers and even by the period of lysis and crisis of various diseases, would appear at least to suggest an impress upon the fixed cells of our body which has been stamped upon them from the time that their ancestors lay upon the sea-beach and depended upon the rhythmic rise and fall of the tides, for their very existence.

I have no doubt that to the most of you this will appear merely a matter of possibly interesting, but utterly impracticable and useless theory. But, to my mind, the practical teaching of the suggestion is its most valuable part. Not by a search for specifics or germicides or by efforts to extinguish germs which are a million times as numerous as the human family and in their proper place quite as useful—our best friends instead of our deadliest enemies—but by an untiring and intelligent watchfulness to grasp every means which can improve nutrition, elevate the standard of vitality, increase the beauty and symmetry of and in every way possible strengthen and develop these wonderful bodies of ours is our noble aim to be attained. A healthy stomach or bronchus is the hottest place a disease germ can drop into. The most powerful enemy of death and disease is life in its most vigorous form and our mission, as already beautifully paraphrased in religious imagry, is that our patients "might have life and that they might have it more abundantly."

Dr. Herrick, of Cleveland, expressed gratitude to the author of the paper. It looks, he said, like getting back to solid ground, and I heartily commend its contents.

Dr. Eckert, of Iowa, stated that the paper met his approval in several ways. He thought it broke down the popular misconception of Darwinism. He thought that it also harmonized modern views of anatomy and pathology.

Owing to the lateness of the hour, and the happy anticipation of an excursion on Detroit river, under the auspices of the local profession, the papers remaining on the program were read by title, and the Section adjourned.

EUROPHEN, WITH CLINICAL REFERENCE TO EUROPHEN AND EUROPHEN-ARISTOL.

Read by title in the Section of Practice of Medicine at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JOHN V. SHOEMAKER, A.M., M.D.,
OF PHILADELPHIA, PA.

Europhen results from the action of iodine upon isobutylorthocresol in a solution of iodine of potassium.[1] The product, as prepared and sent out by the Farbenfabriken, formerly Friedrich Bayer & Co., of Elberfeld, appears in the form of a fine, soft amorphous powder, slightly resinous to the touch, of a light yellow color, destitute of taste and having a faint, not unpleasant odor which recalls that of saffron. This odor is almost entirely lost when europhen is made into a mixture or solution. Europhen is insoluble in water and glycerine, soluble in alcohol, ether, chloroform and fixed oils. When exposed to a heat of 160° F., europhen thickens and at 230° F., is converted into a clear brown fluid. The specific gravity of europhen is five times less than that of iodoform and half that of iodol. The body is easily decomposed by light and heat. It should, therefore, be kept in a dark, dry and cold place and its solutions be made at a low temperature.

The average proportion of iodine contained in europhen is 27.6 per cent. A small precipitate, consisting of an organic iodine compound and soluble in water, forms from solutions of europhen. It is likewise present in the dry powder. A very small percentage of free iodine, formed during the drying and which cannot be removed from the product, is present in europhen. Solutions of europhen in alcohol and ether slowly liberate small amounts of iodine. Europhen should never be mixed with fat combined with starch. It is incompatible with metallic oxide and the salts of mercury. Fats free from starch are good excipients for europhen, and lanolin is particularly appropriate, since the large amount of water which it is capable of taking up promotes the liberation of the soluble iodine compound.

Siebel has determined that the presence of europhen in culture-media prevents the development of pathogenetic microörganisms by a chemical action and arrests the formation of products of decomposition.

Europhen adheres firmly to cutaneous and mucous surfaces with which it is brought in contact. Under the influence of liquid pathological products, it is believed to slowly give off small quantities of iodine which entering into immediate action, form the soluble organic compound of iodine to which reference has been made. When taken by the mouth, europhen undergoes but little change as it passes through the system. A very small proportion of iodine appears in the urine after its administration. It is removed from the body with the fæces for the most part unchanged. The alteration is scarcely greater when dissolved in oil and it can be subcutaneously injected. Europhen is, consequently, a nontoxic substance. Two or three drachms have been given to dogs without any ill effects and fifteen grains have been taken by the human subject with no more serious result than a slight sensation of weight in the stomach.

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[1] The physical and chemical properties of europhen have been carefully studied by Dr. F. Goldmann and are described in the *Pharmaceutische Zeitung*, July 15, 1891.

The first clinical experiments with europhen were undertaken by Dr. P. J. Eichhoff of Elberfeld, who published in the *Therapeutische Monatshefte* for July, 1891,the results of its employment in a series of cases. A chronic and obstinate ulcer of the leg, which had resisted the action of many other remedies, healed in six weeks under the application of a ten per cent. ointment of europhen. A deep and sluggish ulcer, dependent upon a marked varicose condition of the limb, was almost entirely cicatrized in five weeks by the same method of treatment. Several chancres were healed and their induration removed by the insufflation of europhen upon their surface in periods of from two to four weeks. The application of the powder removed, in three cases, large condylomata of the anus and genitalia in 10, 17 and 28 days. A case of syphilitic papules with leucoderma and marked thickening of both labia majora was relieved in the same manner. At the end of two weeks the papules had disappeared, but slight pigmentation remained and the labia were reduced nearly to their normal size. An ulcerated scrofuloderma of the arm in a girl of fourteen years cicatrized under a europhen ointment in 19 days. A ten per cent. salve was first used but giving rise to irritative eczema of the surrounding skin, was after three days, replaced by a five per cent. ointment. The irritation persisting in the same degree, however, at the end of three more days, a one per cent. preparation was applied. The healing process continued at an undiminished rate,and the eczema soon subsided. In a case of lupus vulgaris, after scraping the softened nodules with a sharp spoon, europhen powder was dusted upon the surface and a firm smooth scar was obtained by the eighteenth day. A burn of the third degree was cicatrized by a one per cent. ointment in 20 days. Chancroids were rapidly healed by application of the powder. In several cases of parasitic eczema europhen occasioned little or no improvement and was discontinued. The result was the same in a case of impetiginous eczema. Europhen in the form of a ten per cent. ointment, was less beneficial in a case of psoriasis than either aristol or tar. In a case of favus, likewise, europhen proved of no avail. An injection of europhen in olive oil and acacia was disadvantageous in two cases of acute gonorrhœa. It gave rise to pain and was abandoned. In a case of gonorrhœa of the urethra and cervix uteri, however, under the care of Dr. Siefert, of Wurzburg, a tampon impregnated with europhen caused speedy diminution of the discharge and disappearance of the gonococci. In a case of endometritis with erosions of the os uteri and a copious seropurulent discharge, a decided improvement followed. Dr. Petersen, of Wurzburg, reports satisfactory results from the insufflation of europhen in the rhinitis of scrofulous children, attended with profuse discharge and eczema of the nares. He thinks from his experience in three cases, that the same method of treatment will probably be found useful in acute rhinitis. Europhen was also of value after operative procedures within the nose. A ten per cent. ointment of europhen was, in the clinic of Dr. Siefert, extremely efficacious in the treatment of both the simple and fetid forms of atropic rhinitis. The preparation was introduced upon cotton tampons, which were allowed to remain in place for about half an hour. The dryness gradually lessened, secretion increased, crusts and offensive odor disappeared. From one of the clinics of Heidelberg, Dr. von Szoldrski reports favorable influence in three cases of laryngeal tuberculosis with abundant muco-purulent secretion. This writer also testifies to its worth after operations upon the nose and larynx. Dr. Lowenstein has obtained good results from the use of europhen in perforating ulcer of the septum of the nose and in epistaxis dependent upon erosion of the septum. Dr. A. Nolda, has successfully used europhen in three cases of suppurative otitis media, in leg ulcer, chancre and chancroid. In the last named affection, a comparative study led him to esteem europhen as being more efficacious than iodoform. On account of its lightness, a given quantity of the former will cover five times as much surface as the same amount of the latter substance. Dr. Vulpius states that in the clinic of Professor Czerny, in Heidelberg, europhen has been employed with satisfaction in the treatment of accidental and surgical wounds, osteomyelitis and tubercular ulcers. A communication has been made by Dr. Juan Santas Termandez in regard to the value of europhen in ocular affections. He has employed this remedy in conjunctivitis, keratitis, traumatism and after operations, generally in the form of a one per cent. ointment.

Dr. Eichhoff has made experiments with hypodermic injections of europhen on constitutional syphilis. He injected from one-half to one and one-half grains dissolved in olive oil once daily and states that while in some cases the results were decidedly encouraging he is not able to recommend the method for general adoption. Dr. Gaudin, of Paris, has written favorably of the effect of hypodermic injections of europhen in tertiary syphilide in which he considers it more effective than in the secondary form of the disease.

Both aristol and europhen are prepared by the same firm of manufacturing chemists and have similar therapeutic powers. Both substances are proposed as substitutes for iodoform, over which they possess the decided advantage of comparative absence of odor. It has been thought that the sphere of activity of each product may be enlarged by combinations and with this view, a mixture of equal parts is offered under the name of europhen-aristol. The mixed product is an impalpable powder, of a buff color, a rather more pleasantly aromatic odor than europhen and somewhat more resinous to the touch. It will probably be found superior in adhesiveness to europhen. The properties and uses of aristol I have already described. (*Medical Bulletin*, June, 1891.)

Specimens of europhen and europhen-aristol having been placed in my hands, I have carefully studied their effects in a number of cases to which they seemed applicable and believe, that europhen, like its predecessor, aristol, is entitled to rank as an acquisition to the list of therapeutic agents. My experience relates especially to accidents or diseases involving the integument.

Primary union promptly takes place in incised wounds when,after being cleansed and approximated, powdered europhen is kept applied to the surface. This substance, like aristol will, no doubt, prove efficient as a dressing to many forms of operative wounds. In contused and larcerated wounds, inflammatory action is abated and destruction of tissue is minimized. The surface is maintained in a dry and aseptic condition and the loss of tissue is solely dependent upon the extent of interference with the capillary circulation of the injured part. The devitalized tissue is protected from the action of pathogenetic organisms, which so often and so seriously complicates the case in these varieties of traumatisms. Chronic ulcers of the leg were favorably influenced by both the pure and mixed powder. One case in particular, I may cite by way of illustration. A large and indolent sore, of unhealthy appearance, had long been seated upon the lower third of the left leg of an old man. The veins of the limb were enlarged, tortuous, prominent and engorged. The granulations were feebly organized, the surface was covered with sanious pus, was sensitive and prone to bleed. The edges were callous and the lesion was surrounded by a zone of lividity. Many remedies had been used with little or no effect, and the patient, discouraged by ill success, had perhaps, neglected scrupulous and constant attention to cleanliness. As a preliminary measure, I directed the surface to be cleansed with a weak lukewarm solution of carbolic acid and when the inflammatory products had, as far as possible, been removed, to be strewn with europhen-aristol powder, covered with a layer of borated absorbent cotton and moderate compression exerted by means of a roller bandage carried from the foot to above the knee. Together with this local therapy, appropriate dietetic and constitutional measures were instituted and the patient was directed to rest his limbs, as much as possible, in the horizontal position. A highly gratifying effect was produced. In the course of ten days, the character of the surface completely changed. Healthy granulations made their appearance, a course of repair was inaugurated which thenceforward proceeded steadily without interruption and at the end of four weeks, the surface was soundly cicatrized. An elastic bandage was ordered for the sake of supporting the toneless and dilated veins and the patient dismissed.

A young girl, 19 years of age, presented, upon the left side of the neck the characteristic and unsightly ulcer resulting from the degeneration of a scrofulous gland with destruction of the overlying integument. The patient was of fair complexion, pale and rather delicate in appearance, but free from any sign or symptom of pulmonary disease. A cicatrix upon the right side of the neck indicated the presence of former ulceration. The surface of the sore was uneven, covered by a grayish deposit and from it issued a thin puriform discharge. The edges were undermined and of a dull red color. Constitutional treatment was ordered and the ulcer was dressed with powdered europhen held in place with a pad of borated cotton. Improvement soon began, the suppuration diminished, the grayish exudation disappeared, the granulations took on a healthy aspect and at the expiration of about three weeks, I was able to discharge the patient with a freshly formed and healthy scar occupying the site of the lesion.

A woman, aged 26 years, long the subject of lupus vulgaris, upon whose face both nodules and ulcers were present, who had been treated by many physicians and by almost every known method, was chosen as an excellent case by which to test the virtue of the new remedy. Twice or thrice daily, europhen in powder was freely dusted over the ulcerated surface which was, in addition, irrigated every day with a carbolized solution. Amendment was manifest by the end of a week and in three months' time, the patient was discharged cured, at least for the present. Whether relapse shall occur remains, of course, for the future to decide. In another case, of still greater chronicity and obstinacy, an equally favorable result was obtained though the progress of repair was more tardy.

A man, aged 68 years, of good habits, came to the Medico-Chirurgical Hospital on account of a superficial ulcer, situated upon the upper third and toward the outer border of the right thigh, about five inches below Poupart's ligament. The disease had begun as a hard papule which was the size of a buckshot when first observed. After some months the skin had cracked and given exit to a thin, blood-stained fluid. This discharge soon dried and formed a thin, brown scab. Subsequently a roundish ulcer, with hard edges and a red base had formed. The patient was undoubtedly afflicted with the superficial form of epithelioma. The ulcer, which had been cauterized and curetted to no avail, was the seat of pain. Europhen in powder was at first applied but not being followed by much improvement, the ointment form was resorted to and after several trials, a preparation containing from three to four drachms of europhen to the ounce of a fatty base, was adopted as the most suitable to the morbid condition. Under this medication, the pain subsided and healthy granulations slowly sprang up, gradually spreading until the raw surface was entirely cicatrized. The ulcer was healed at the end of about four months after beginning the course of treatment. In another case, that of a woman, fifty years of age, a small epithelial ulcer was seated upon the left ala of the nose. It had seemed in the beginning, to be nothing more dangerous than a wart, sometimes a stinging, darting pain would be felt in the growth. At length the skin broke, a little sanious discharge escaped, dried into a brown crust which the patient picked off, exposing a deep red, raw but dry surface with hardened edges. This ulcer grew gradually and slowly in extent, and when the patient applied for relief, involved nearly all the surface covering the ala and the cartilage. Aristol was first used upon this lesion but although some improvement was observed, the ulcer still remained open and irritable. Europhen was next employed with about the same result. The sore manifested, a slight disposition to heal but no decided gain could be detected. For some weeks the two remedies were then used alternately but still the condition remained comparatively unchanged. Finally the mixture of equal parts of europhen and aristol was used, when the ulcer began to gradually but steadily heal from the bottom and in about ten weeks a well marked cicatrix had formed.

The upper lip of a young man was invaded by sycosis, was red, swollen, surmounted by papules, pustules, scales and crusts. The lesions were numerous and had coalesced. Some of the pustules had freshly ruptured when he first came under my care, and the hair, which he had as closely trimmed as possible, was matted together in places. The patient suffered considerably from the sensations of heat, smarting and tension in the affected part. After the crusts had been removed by the oil of ergot, I directed the part to be thoroughly cleansed by a weak lotion containing hamamelis, after which a 10 per cent. ointment of europhen was placed upon the surface. The hair being closely cut, no difficulty was experienced in making the application. The subjective symptoms were rapidly alleviated and the objective manifestations soon began to improve. The ointment was placed upon the surface several times during the day, and its use was eventually followed by a complete cure.

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As a rule, no instant effect will follow the application of europhen powder upon an unbroken surface. That in certain conditions in which the vitality of tissue is lowered, it may give rise to an irritative eczema, is shown by one of Dr. Eichhoff's cases. It has, however, sometimes appeared to me to exert a stimulant effect upon the integument and its glands. I have seen several cases of hyperidrosis in which the excessive secretion was manifestly restrained by frequently dusting the surface with europhen powder. To the unfortunate sufferers from bromidrosis of the feet, the europhen-aristol powder has given decided relief, arresting the discharge and removing its offensive odor. At night the feet should be bathed in a slightly stimulating bath, containing mustard-flour, salt or alum, and after being dried by brisk rubbing with a towel, the powder is sprinkled liberally upon the surface and between the toes. By day the powder is strewn in the stockings.

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This has very recently been incontestibly demonstrated, in the immense improvement in the management of spinal lesions, which totally invalided, deformed, or crippled many in former times, but which now, if treated early and properly, by modern orthopædic appliances may, in the majority of cases, recover, with full restoration of function, and little or no deformity.

In order, however, to effectually utilize mechanical appliances in spinal affections, we must have a clear and definite knowledge of the condition which we propose to treat, and the manner in which our therapy is to be utilized, with a view of accomplishing the greatest good and inflicting a minimum of injury.

The pathological conditions of the spine, in which orthopædic instrumentation may serve a useful purpose, may be divided into classes.

The first, is that in which local disease arises from constitutional causes.

The second, is when such lesion follows a traumatism.

The third, when the spinal infirmity occurs from a combination of both the above, as when one predisposed to rachidian disease, suffers a slight or severe injury anywhere over the back.

They may be further sub-divided into lesions (*a*) in which the elements of the cord above are involved, or those mainly limited to the bony column, the cord suffering only consecutively, (*b*) acute and chronic maladies. This division might be continued *ad infinitum*, for the subject is a very large one; but for the purposes necessary to a simple elucidation of our subject at the present, these headings will answer.

In acute spinal meningitis or spinal myelitis, evincing a short course, the back is rigidly fixed by muscular spasm and moves only when convulsive discharges are directed outward.

With this class, exclusive of securing a firm, yet comfortable, resting surface, little good will be derived, from any adjustment appliance.

With those chronic spinal affections of either the cord or bony canal, mechanical appliances, properly utilized in point of efficacy, can be superceded by nothing. This is especially true of the bony skeleton.

But with many, Pott's disease is so insiduous in its development, that the first definite indication of its existence we have is a deformity. Now, on inspection we will notice that the falling in, aching or twisting of the vertebral column, can in any case be readily explained by physical laws. We will observe an invariable shifting of the center of gravity with a compensatory distortion and hypertrophy, of those vertebræ above and below the diseased centre; and of the ribs and sternum as well.

The objects in view in the treatment of what has been designated Pott's disease, *i. e.*, disease of the bones, cartilages and ligaments of the spine, are, 1. To arrest the disease if it has not already made much headway; and 2, to limit deformity. Many methods have been employed to attain these ends. It is unnecessary to say, that in any case hygienic, constitutional and medicinal treatment should go hand in hand with orthopædic appliances. When the early onset of spinal disease is recognizable, it is generally conceded that bodily rest is essential. This holds good, also, in the more advanced cases, in which deformity is already established, and pathological changes are advancing, either slowly or rapidly; and in which, perchance, paresis or paralysis of the upper or lower extremities, or both, announce pressure on the cord, within the canal. In this class then, the question is how shall the necessary rest be best atttained, without, while instituting it, inflicting greater damage to the economy, than if nothing whatever had been undertaken? In answering this question, it is needless to say, that we must under all circumstances be influenced by the surroundings of the patient, his age, the condition of his general health, the precise nature, location, and extent of the malady, which we commence to treat. Before we undertake to describe the various ways, through which limitation of movement can be best effected, and that *rest* secured, which authors attach so much importance to, it is well, that we have a clear interpretation on, or a definition of, what is meant by the term, *rest*.

If we were to understand by it, that the word was synonymous with immobilization, it would be quite a simple matter to immobilize the spine. It is clear, however, to anyone, on very slight reflection, that this sort of fixation, must necessarily entail the employment of braces, stays, and binders, thereby securing constant, uninterrupted pressure, in consequence of which, we must have, through its effect on the soft parts, on the vessels and nerve-trunks, and through cessation of muscular movement, great physical discomfort, a serious interference with nutritive and regenerative processes, and consequent arrest of bodily growth. This indeed, is just what does occur in every case of spinal disease in which its mechanical treatment is abused or misdirected. Absolute immobilization then, means every time, if it be continued long enough (and spinal disease is always a chronic, tedious malady), degeneration of tissue and destruction of function.

Rest, then, must not be comfounded with immobilization. *Rest* in a physiological and surgical sense, means recuperation and restoration, and nothing more. The placing of the parts, the spinal column of bones, or the fractured bone of a limb, or other part of the body, in such a position, or under such conditions, as will aid the regenerative powers, in most promptly regaining their full, functional strength, is *rest*, in its broad and general sense. Limited fixation and interrupted motion are not incompatible with *physiological* rest. On the contrary,-as was pointed out by Prof. Chiene in his justly celebrated address, before the British Medical Association, in 1891, that the broken rib, which never rests in the living body, unites more quickly than any other bone; and, in any fracture he said, he believed properly applied massage, fixation and interrupted pressure rather forced early union than otherwise. Perhaps it would be more comprehensive, if the word *support* were adopted rather than rest; for the latter implies that the spine has been over-strained, overworked, or over-exercised, when nothing is further from the fact. But that it has been damaged by accident or disease, has been weakened, in other words, it goes without saying; then it needs, not rest, but *support*. How this support can be most economically and effectively supplied in each given case, is what particularly concerns us on the present occasion.

In every instance, in the acute stages of spinal disease, or even that phase of it pursuing a chronic course, unless the patients were within a convenient distance of some institution, for free treatment of spinal diseases, in which they will come under the direct observation of experienced surgeons, or they have no means to secure skilled services at home, it will be well to let them spend a considerable share of their time in bed, lying on the back, or either side, in such a position, as will secure as much comfort as possible. The main objection to this line of treatment, is the necessary confinement within doors, want of bodily exercise and the tendency of the patient to so bow the spine, as to greatly aggravate the angular curvature.

Manifold and varied have been the apparatuses devised which would obviate the necessity of this bodily inactivity, and yet permit the patient free use of the limbs with out-door exercise, while supplying ample support to the swaying spinal column. Thoracic-supporters, wire corsets, head rests, steel hooped braces and other appliances almost without number, have from time to time, been selected. But, there were many objections against the use of a greater part of them. They were expensive; they were liable to get out of order; and with the growing child, needed occasional renewal. Independent of these undesirable features, connected with them, if imperfectly constructed, or not properly applied, they often so chafed and irritated the patient, that they had to be thrown aside altogether. It is quite a simple matter, when disease is limited to the cervical vertebra, to lift the weight of the head, off its weakened support without resorting to any one complicated apparatus; but when the vertebral bodies commence to fall inward in the dorsal or lumbar regions, to so apply an adjustment, as will afford ample steadiness and quiet without interfering with respiration, or causing such pressure on the great spinal muscles as will induce a wasting and weakening of them, when the osseous lesion is wholly recovered from, is a difficult problem to solve. Still very much has, of late years, been accomplished in the way of surmounting this difficulty. It is important in the mechanical treatment of spinal disease to bear in mind the fact that when once well established, it is an affliction which runs through years, that it is, however, limited in its course; and finally that it terminates in an anchylosis, or osseous fusion of the affected vertebræ, thereby, forever destroying the elasticity, pliancy and strength of the trunk. Accordingly, in every instance, we must be prepared to deal with a case requiring a long period for treatment; and that our appliances may not, by too long continuance, or want of modification in their construction, do harm to one patient, they must be changed or wholly discontinued when a cure has been finally attained, much depending always, on the thoroughness of the cure, the degree of deformity resulting. In cases of violent traumatisms of the spine, implicating the bone and spinal marrow as a primary measure, I have never had occasion to employ any sort of apparatus or adjustment, except in two cases of fracture in the cervical region. In neither of them was it satisfactory. With the adult who has sustained a very violent concussion of the spine, with or without fracture, it is seldom that the internal organs escape Anyway, there is always more or less extensive bruising of the body. With this class, it is a simple matter to secure the necessary rest to the crushed parts, by placing the body in the prone position, and adding supports in such numbers and situations as may be indicated. The majority of these go on to mortal termination, within the first week. Clearly, it would be immaterial to fix the spine in any sort of an adjustment, when we have indisputable evidence of serious kidney disorganization, or in the presence of such symptoms as would render the immediate prognosis doubtful. Should those cases of spinal traumation pass through the first week safely, and indications of the recovery of the bodily strength are present, then we may consider the propriety of fixing the body in a mechanical adjustment, or introducing such measures as give the greatest comfort and best prospects of recovery.

Our first concern, should be the bed of our patient. It should be narrow, but long, so that in handling him, he will be in a position most convenient of access. The bed should be long, to allow for extension, and a free space at the end of the head and feet. In every case there should be a rope to extend from a staple in the ceiling, with a bar attachment, for the patient to exercise his arms, and as strength returns, to shift his position. The mattress should be of a firm consistence of straw, husk or hair. The bed should have no springs.

When our patient is in bed, little or no good can come from any direct sort of adjustment to the back. It is already amply supported by a firm, comfortable surface underneath and on each side, and a cool comfortable packing can be easily extemporized in every case, in order to prevent a lateral sliding or undue inclination in any one direction. The cervical end of the spine, however, may require a special adjustment if the effects of the traumatism are located here.

In my own cases of injury in this region which went on to recovery, broad, lateral traction, extending down over the ears, passing under the chin, served a most satisfactory purpose.

In cases of fracture of the dorsal vertebra, without considerable displacement, some resort to enveloping the lower thorax in a plastic material, while others prefer extension of the spine, though, until quite recent times, no mechanical adjustment of any description was employed. It has long been a disputed question whether or not the spinal column is capable of mechanical extension by weights acting on the lower extremities, while the body lies in the prone attitude. Assuming that effective extension on the back is possible, yet the confined posture of the body, with the tendency to bedsores, and difficulties in the way of supplying the demands of nature, render it an undesirable means of relief; particularly when others more efficacious are readily accessible. In my own hospital service, with a considerable experience in the management of spinal traumatism, when the lesion has been limited to the osseous elements, extension or counter-extension has rarely been applicable.

In many we will observe, in pathological conditions of the spine of a constitutional or traumatic origin, an association of morbid processes which involve, simultaneously, the medullary and osseous elements; varying phases of paralysis being observed, while full mobility of the spine may be temporarily or permanently in abeyance. Lastly, there is another, the rarest group, in which there is no evidence of bone disease, the pathological lesions affecting the cellular elements, or membranes of the cord, in either one or both lateral divisions of the column, and occupying varying areas; hence in one we will meet with monoplegia, another paraplegia, and in another motion is absent, but sensation is present. In fact, in those myopathies of an eccentric or spinal dependence, they assume every sort of simple and complex phase, from the bedridden state, to a general or local ataxic condition of muscular movement.

MECHANICAL APPLIANCES.

The mechanical apparatus which may be utilized with the greatest advantage, in the three divisions of spinal lesions here defined, may be divided into two classes, viz.: those which are fixed and those which are movable, or portable. The one entails a more or less fixed position of the spine, while the other permits of free movement and is intermittent in its action. It would be useless to go back into the early history of the healing art, to trace the origin of mechanical supports in spinal maladies: suffice it to say, that they have been employed, in a crude form, since very remotest ages, for at present we are chiefly concerned with the advances of our own times.

The fixed apparatus is a brace, calculated to lift and carry the superincumbent weight from the seat of disease. They are manufactured from every conceivable pattern and material. It was not until Prof. Lewis A. Sayre utilized the plastic and yet powerful properties of plaster of Paris that an ideal material was discovered, which is adaptable to a very wide range of spinal maladies. The cheapness of this material leaves it within the reach of the surgeon, and there is no deformity which it cannot be adapted to. But, there are certain, definite principles which must be observed in its application and use, or it will do more evil than good. It must be remembered that the plaster jacket, so-called, is applied principally for the double purpose of maintaining counter-extension while it supports the yielding spine. With the growing child it must be frequently changed, in order not to interfere with growth or cause muscular atrophy.

In the acute stage of Pott's disease, Sayre's plaster jacket stands almost without a rival. In the paretic or paralytic, in which there is a tendency to a sort of "tumbling-in" of the lower dorsal, or upper lumbar vertebræ, in the adult, it is a veritable godsend to those unable to provide expensive apparatuses, or those who cannot wear them.

The cases in which the Sayre-jacket serves the most useful purpose, are those, in whom the disease is chiefly osseous, for I am not aware, that it has been recommended extensively in conditions of the spine of a purely neurotic type.

It has been alleged by not a few, that the great utility of Sayre's jacket is derived rather from the body suspension and spinal extension, in its adjustment, than from the jacket itself. And acting on this assumption, neurologists have applied suspension in tabes-dorsalis and other affections of the medulla-spinalis, with varying results, since Sayre's invention. The principal objection to the plaster jacket is, that its action is constant; there is no "let up," so to speak, but the pressure which it induces is continuous, so that there is liability to myopathic, degenerative changes, with erosions and ulcerations at osseous points not imbedded in muscular or adipose tissue. This has in part been lately obviated by splitting and lacing the jacket anteriorly, so that pressure can be more equably adjusted.

Moreover, there are cases in which the gypsum dressings are not applicable, or cannot be comfortably worn, besides many in which it fulfils but one indication, in which it is obvious that something else is desirable, something which permits of interrupted, full extension of the spine in the upright position, without continued lateral pressure, so as to allow of massage of the dorsal muscles and free, unrestrained action of the hands and arms, when these members are not palsied.

I can in no manner describe the class which I refer to, better than by citing a case:

The patient was a young woman, who was sent into my service at the Harlem Hospital of New York, early in the summer of 1891. She gave a history of having injured the spine by a fall some months before, from which time, she was completely paraplegic, and paralyzed from the mid-dorsal region of the body downwards, although control of the anal and vesical sphincters was maintained. The consideration of this case from a forensic point of view I have fully dwelt on in a brochure presented elsewhere.[1]

She was considerably emaciated, with a poor appetite, and was in a melancholy state of mind. The plaster jacket had been applied before she came in, but effected no benefit, besides caused so much discomfort, that it had to be laid aside. It was apparent that this case, which presented well marked indications of disease of the vertebræ, with pressure on the cord, required some sort of a mechanical appliance to either supplement the jacket or substitute it; which would permit of vertical extension of the spine, ample support of the body, and free muscular action in the parts not involved. At about the time she was admitted, while on my way to Washington to attend the meeting of the American Medical Association, I met on the night train Dr. Meigs Case, of Otsego Co., N. Y. He described his portable carriage, known as "the Meigs Case Spinal Apparatus," for spinal infirmities, and advised me to try it on this patient. Immediately on my return, some kind lady friends, on my recommendation, purchased of the Pomeroy Truss Co. one of these carriages. At first she was so utterly helpless and limp, that in adjusting her in the spinal apparatus, it was like swinging a corpse; but after a few persevering trials she commenced to gain confidence, and could assist us with her arms. After one month, full sensation returned in the extremities, this was followed by occasional involuntary spasms of the lower spinal and femoral muscles. After three months, she could stand and steady her body by firmly holding the side-bars with her hands. After six months, she was able to lift the feet and take five steps without any assistance. From this time onward her progress was rapid. At first walking with crutches, then with a cane, and finally, when she left the hospital, nine months after admission, going about where she pleased, without any support of any kind, except the corset.

Simultaneously with the commencement of the use of Dr. Case's spinal apparatus, her general strength commenced to improve, the appetite was better and constipation disappeared. Shortly after improvement was well marked, being desirous of sitting up, another Sayre jacket was adjusted, which she wore with great comfort until she left us.

From my experience with this case, and a study of the mechanical principles on which the Meigs Case spinal apparatus operates, I feel amply justified in recommending it in a very large class of spinal diseases, and in maladies of the spinal cord which present symptoms of paralysis or incoördination, in an early stage of life. It fulfils, in a larger measure than any other apparatus, the indications for mechanical therapeutics of the spine, in providing simultaneously bodily support, vertical extension and free muscular movement. I am confident that a better acquaintance with the many purposes which this valuable contrivance serves, and a familiarity with its use, will commend it to every practitioner who is desirous of securing for his patients such facilities as will favor the rapid and complete restoration of spinal function.

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[1] Annual Meeting of Association of Railway Surgeons at Old Point Comfort, Va., May 25, 1892. "Diagnosis and Prognosis in Spinal Lesions."

When all symptoms of paralysis have disappeared, and only weakness remains, then, with those unable to provide expensive, complicated braces, the employment of the Sayre jacket is indicated. It may be made light or heavy as required, and be renewed or dispensed with, as conditions indicate. In all cases of spinal infirmities requiring any sort of extension or support, the patient's bodily comfort is enhanced, besides, the state of the muscles and internal organs are all benefited by massage, judiciously applied.

EPILEPSY.

Read by title in the Section of Practice of Medicine, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, June, 1892.

BY M. M. LEAHY, M.D.,

OF CHICAGO, ILL.

Admitting that from the time of Aristotle, when a knowledge of the structure and functions of the human body first began to be cultivated systematically, down to the present day the demonstrator of morbid anatomy has not lived who can point with unerring finger to the cause of epilepsy; admitting, too, that of more than eight millions of the world's people, whom statistics prove to be epileptics, perhaps less than one third are curable; yet we claim that in our thirty years' experience, both in Europe and in the United States, we have not been without some measure of success in the treatment of epileptics who continue to report themselves free from fits.

In response to a request for a chapter from our own experience in the treatment of epilepsy, leaving its etiology, pathology and history to the many able medical writers of the day, we purpose giving a brief history of a few selected typical cases and if this should prove helpful to one student or inexperienced young physician the mission of this paper will have been accomplished.

We have been asked our method of diagnosis and in reply would say, we use our educated senses.

It was our fortune throughout our entire European course of medical training to be a special student under a preceptor who, while he possessed one of the finest medical libraries in the kingdom, regarded all book knowledge as secondary to education of eye, ear and fingers. The student was put in a hospital with the understanding that no physician ever knew a thing that he could not see, hear or feel for himself. His text-books were the patient and the cadaver; there he staid and there he wrought under the most rigid task masters until he could tell almost instinctively, not only the ailment, but the treatment that should be used in battling with the disease. So while we have no wish to depreciate the many excellent instruments used as aids in detecting morbid conditions of the body, our own educated eye, ear and finger tips serve us with a fidelity that few manufactured instruments can equal or surpass.

It is said, if you place before a certain cultured lady, blind from her birth, a gorgeously embroidered cloth, that by passing lightly over it with the delicate tips of her educated fingers she can describe, not only the texture of the materials but every shade and tint of color used.

Now, one need not be born blind to detect the soft, mellow skin of phthisis or the dry, scaly skin of syphilis. Neither need he be bereft of other senses to hear an abnormal vesicular murmur or to read the history which every pain records upon the human countenance.

It is, then, with every sense on the alert, that we search for the break or obstruction in the physical economy of the epileptic; and when found, our entire energy is directed to the repair of the break or the removal of the obstruction.

Since no two constitutions require precisely the same medical and hygienic treatment we pay the greatest respect to the several idiosyncrasies of our patients. In fact the therapeutist has not lived who has dared pronounce upon the best "fit remedy" that ever issued from the door of a chemist's laboratory as even approaching infallibility, and the man who advertises a specific dose of a special nostrum as a cure for epileptic fits regardless of temperament or condition of the patient must be a fraud or a fool.

We have been asked our judgment with reference to the probability of cure in a case of genuine epilepsy. In our own practice we have found that if the predisposing cause be compression of the brain or lesion of the spinal cord, the chances are, at least one hundred to one, that the former will be followed by idiocy or softening of the brain and the latter by paralysis, both terminating fatally.

If the patient be the offspring of scrofulous, intemperate, phthisical, syphilitic or epileptic parents we may give relief for months and even years at a time, but the chances are against a permanent cure.

If, however, the predisposing cause be a simple disturbance of some part of the alimentary canal, the liver or the kidneys, an irritation of the pneumogastric nerve, the chances are decidedly in favor of a permanent cure.

The history of the following selected cases may serve to explain our general plan of treatment:

About five years ago while conversing with a friend in one of the public buildings of Boston, Massachusetts, we observed an employee, a finely built, robust, young man approaching. Just before he reached us he uttered a harsh scream and fell, bruising his face upon the stone where we stood. Instantly placing him upon his back, with a coat for a pillow, and a block of cork between his teeth, and loosening his neck-wear we watched the progress of the fit. With eyes fixed, pupils dilated, head drawn down toward the left shoulder, face and eyes directed toward the right, breathing and sensibility suspended, left arm and leg extended and twisted, left foot arched, fingers and toes flexed, he was as stiff as a board for nearly a minute. Then began exaggerated muscular relaxations and contractions of the entire body. The breathing now resumed was loud and jerky, the color changed from deathly pale to dark purple while the veins of the neck became much distended. Of a sudden every muscle was forcibly stretched to its full length and instantly relaxed and the patient gave a long, loud sigh, thus ending a fit of not more than three minutes duration. This was followed by a lethargic sleep and a dull, confused awakening, lasting but a few moments, during and after which we made a careful diagnosis of his general physical condition. We discovered ecchymoses on the face and neck, a stomach distended with gas and undigested food, a gorged liver, the lower bowel distended with gas and feces, a clear case of *le grand mal*, induced by irritation of the pneunogastric nerve. As he had the strength to bear rather heroic treatment, we gave both emetic and cathartic to clear out the alimentary canal. We stimulated the liver, kidneys and lymphatics, opening up nature's channels, giving her a chance to rid herself of all morbid matter. We then gave bromides in an infusion of belladonna leaves, commencing with a small dose and increasing the quantity until we reached the maximum dose his constitution would bear. We gave a hydragogue to prevent venous congestion, using

entire absence of jaundice—we may safely predict the presence of a calculus in the gall bladder.

Gall stones may remain in the gall bladder for an indefinite time without the least pain; at other times there may be present the most dangerous symptoms such as I have described, without the slightest trace of jaundice. *When impacted in the cystic duct*, then the suffering becomes intense, and so long as it remains, although no bile can enter into the gall bladder or escape from it, yet it offers no obstacle to the direct flow of the biliary secretion from the liver into the intestine. So long as this impaction remains the patient is in the condition of a person upon whom cholecystectomy has been performed.

The office of the gall bladder is to act as a diverticulum and a receptacle, and contains the excess of bile secreted during the intervals of digestion; aside from this it is non-essential; it is absent in many instances, in several animals, such as the horse, the deer, the elephant and in many birds, such as the ostrich and the parrot.

Budd says the effects of the closure of the cystic duct, on digestion and the general health, are much less serious than might be expected, and are sometimes of very little import. Dr. Alexander Simpson report a case in the *Edinburg Medical Jaurnal*—of a child in whom no trace of a gall bladder was found at the autopsy.

How can we account for the presence of pain when a calculus is impacted in the cystic duct? The solution readily presents itself, if we remember that the gall bladder is provided with a muscle, and that it must contract with increased force to overcome the resistance offered by the calculus fixed in the cystic duct, just as the urinary bladder contracts with increased energy when a calculus is arrested in the canal of the urethra, or the ureter contracts when a renal calculus travels along it to the bladder.

What is the condition of the gall bladder when digestion is going on in the stomach? It is full of bile and it empties itself by a powerful contraction while the digested food is passing through the duodenum.

No one perhaps stated the cause of hepatic colic more clearly during digestion than Bartholow. He asserts that common observation shows that the symptoms of hepatic colic usually declare themselves in two or three hours after a meal. At that time when the presence of the chyme in the duodenum solicits the flow of bile, the gall bladder contracts on its contents in direct ratio to the amount of bile present, and with the gush of fluid the concretion is whirled into the duct.

The muscular tissue having undergone hypertrophy—owing to the efforts to overcome the obstruction dependent upon the impacted calculus, the paroxysms of pain are more likely to occur at this time than any other, and the persistent and unyielding obstruction will produce the distension and enlargement of the gall-bladder already alluded to. There is yet another difficult problem to solve—why is it that in some cases we have distension augmented until the viscus descends even to the iliac crest, containing pints of fluid, while in other cases, a much less frequent occurrence, we find atrophy of the gall bladder contracting and embracing the calculus. Rokitansky believes that its obliteration is frequently consequent upon inflammation.

The enlargement of the gall bladder is largely due to the presence of the mucus secretion from the lining membrane of the gall bladder itself.

There came to my office in the month of December 1890, Mrs. C., aged 34, from Colorado. She complained of pain in in the right hypochondriac region and shoulder; it was increased by violent exercise. There was present also headache and diarrhœa; she was pale and emaciated. She described her sufferings as follows: excruciating pain lasting several hours, usually occurring two hours after meals. The relief was as sudden as the attack. After the paroxysms of pain the tenderness was felt for several days. Not the slightest evidence of jaundice was ever present. There was nothing abnormal in the urine. Upon examining the abdomen I found a tumor to the right of the umbilicus and with its lower part upon the brim of the pelvis. Its shape was pyroform. In size as large as the largest pine-apple. It was free from tenderness. The treatment had been medical only; numerous remedies were tried without affording her any relief. She came to consult me with reference to the possibility of a surgical procedure. I stated to her my diagnosis: that her trouble resulted from calculi in the gall bladder with possibly obstruction of the cystic duct causing distension, that the painful paroxysmal aggravations were due to this cause, and if left alone my prognosis was that a fatal result would inevitably follow. She consented to an operation, and on Dec. 11, 1890, at the St. Joseph Hospital, after observing minutely the special antiseptic precautions which precede laparotomy, general anæsthesia was induced by the inhalation of ether; afterwards the patient was placed upon the table suitably prepared, and the abdomen cleansed. An incision four inches in length was made from the tip of the cartilage of the tenth rib down towards the fundus of the tumor. On reaching the peritoneum it was picked up by catch forceps, and the line of incision continued with scissors. An index finger was introduced to feel for the gall bladder. It was easily discovered, and I was enabled to bring up the fundus with the fingers without the use of the forceps; and lodged in the wound. Its size was diminished by aspirating. Sponges were carefully packed, to receive whatever fluid might escape during this part of the operation. I used catch forceps, seized the fundus at the upper and lower portions, and incised it, inserting my finger to feel if any calculi were present; discovered there were, and removed six of them impacted in the cystic duct. They were removed by using a small scoop and forcep. The gall bladder was now drawn freely into the wound, and the edges of the abdominal wound and the gall bladder were closely kept together by an assistant. The edges of the wound in the gall bladder were sutured by a continuous thread of carbolized silk; this done the bladder was washed out with warm water and a careful search made for calculi; none were found, after which a drainage tube was inserted, and iodoform dressing applied.

The fluid was glairy mucus; the evidence of bile wanting. This, in connection with the quantity—several pints—clearly indicated that the obstruction had existed a long time. I allowed the drainage tube to remain until the 24th day of December. No bile escaped from the wound during or after the operation. A fistulous opening remained and continued to discharge mucus for several months. All my efforts to close it were only partially successful, for if closed for a week or ten days, she complained of fulness and pain over the region of the gall bladder; but when a discharge took place it was followed by relief. At one time when the closure existed longer than usual she concluded to visit Buffalo in the month of April to consult the eminent surgeon Dr. Park. He, after an examination, advised her to return and renew the opening first made, and pack the gall bladder with iodoform gauze. I followed his suggestions but failed to obliterate the cavity. I now attempted by various methods to change the interior of the gall bladder by using injections of compound tincture of iodine, tanin, gallic acid and nitrate of silver. I thus reduced the cavity until it held only a half drachm. It seemed almost closed when she left me for her home. Her general health was marvelously improved; she was free of pain unconfined; exercised freely without exciting any of the symptoms that previously distressed her; even with her improvement I was compelled to listen daily to her complaint concerning the slight stain upon the dressing; but I consoled myself that the varying quality of mentalization is due to the fluctuations in the activity of the hepatic function, and that many a dark ecclesiastical dogma about man and God, have had their origin in the cystic duct.

I firmly believe after reading the lamentations of iodide of potassium or Fowler's solution upon any appearance of bromidism. When last heard from, a few months ago, there had been no return of the fits.

A young lady of Augusta, Maine, may serve as another typical case. The approach of her attack was indicated by a fancy that she heard the most enchanting music, and in her effort to catch the tune which seemed very familiar she lost consciousness in an epileptic fit. Being a sufferer from anæmia our aim was to build up the system, mentally and physically. We prescribed whites of fresh raw eggs, beaten in plenty of fresh milk to make blood, baths and massage to stimulate the capillaries,-rubbing the entire body with good olive oil once or twice a week. gentle out-of-door exercise and entertainment adapted to her taste and capacity. We then gave bromide of lithium and tonics with gratifying success.

We had, not long ago, a patient whose severe epileptic attacks were followed by mental derangement. At times he would hunt in the bed, under the carpet, in the garret and in the cellar for something he fancied he had lost. At other times he would break and destroy everything that came within his reach, even attempting to kill those he met. In such cases we have observed that bromides are decidedly harmful, tending to increase the irritation. In this instance we found the fluid extract of water hemlock alternate with borax, ergot and phosphates, very efficacious in the way of soothing the patient and checking the convulsions. In the course of a few months he died of softening of the brain.

While in charge of a dispensary in Kinmare, county of Kerry, Ireland, a patient, whose case resisted all remedies, died in *status epilepticus*. The autopsy pointed directly to *phthisis renalis* as the predisposing cause.

At the same time we had under our care a young girl afflicted with violent epileptic seizures who was a sufferer from retention of urine. An examination revealed tube-casts and albumen. Our treatment was directed exclusively to the local troubles and when their cure was effected the fits departed and we have never heard of their return.

We have at present under our care a girl aged 10, whose father, an epileptic, died at forty of softening of the brain. Naturally of tractable temper, she took spells, when for days she was irritable, morose and stubborn, culminating in an attack in which the face paled, the pupils dilated, the eyes became fixed and the muscles rigid, lasting but a few seconds. She did not fall and lost consciousness for a few seconds only, but was stupid and forgetful for several days before returning to her normal condition. As is common among epileptics she is a gourmand. We purged her thoroughly, afterwards administering fluid extract of belladonna, 10 drops daily. She has had no return of the fits for five months; but, being inherited, her case must needs be closely watched, especially as she is likely at any time to bring on intestinal irritation by over-eating.

A Chicago boy, aged 9, had violent seizures of *le grand mal* for which we treated him with bromides in an infusion of belladonna leaves without a return of the fits for one year, when not we, but his parents pronounced him cured. All went well until he had an attack of pneumonia after which he become a victim of *le petit mal*. Many times a day he caught hold of his mother with both hands and with violent grimaces uttered a hoarse cry as if in great pain. The attacks lasted but a few seconds after which he seemed dazed and entirely unconscious of what had happened. He had constant and extreme nausea. We gave as strong cathartic and emetic doses as his debilitated constitution would bear, with the result of bringing away from both stomach and bowels an incredible amount of matter having the appearance of strips of sheep skin, with a stench that was almost unendurable. To quiet and soothe we gave sulphate of atropine 1-120 gr. with sulphate of morphia 1-10 gr. and in a few days resumed the bromide and belladonna treatment. There has been no return of the fits since resuming the treatment.

There are a number of other cases illustrative of stages intermediate between *le petit mal* and *le grand mal* in which we are greatly interested; but we refrain from a description feeling that the promised short chapter has already grown sufficiently long.

In conclusion we will say that the greatest obstacle in the way of permanent relief on the part of those who are curable is the unwillingness of the patient and his friends to continue the treatment, medical and hygienic, sufficiently long. After the fits are stopped and the patient looks and feels first rate, both he and his friends seem to regard any effort to induce him to continue treatment as a collusion of doctor and druggist to defraud him of his money.

Before commencing treatment we aim to secure a promise that the patient will continue one, two, or three years as his case may require. Oh, yes, he is ready to promise a five years' trial if we ask it; but four out of five fail to keep a one year promise. The fits return, of course, and the doctor is expected to shoulder the blame.

Is it Utopian to hope that we as honest, earnest physicians whose object is the greatest good to the greatest number of suffering humanity, may, at no distant day succeed in convincing the State at large, of the necessity for special hospitals where all epileptics may be carefully and scientifically treated and where the curable may be kept until they are cured?

OBSTRUCTION OF THE CYSTIC DUCT, WITH A CASE.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 7, 1892.

BY W. H. MYERS,
OF FT. WAYNE, IND.

I will invite your attention for a few moments to obstruction of the cystic duct, a region only recently invaded by the surgeon ; a subject not alluded to in Mutter's Syllabus of 1883, nor found in Cheyne's of 1892.

That the treatment of hepatic disease remained in the field of medicine until within a recent period is proven by the fact that the surgical treatment of the liver by cholecystotomy was first performed by Dr. Bobbs, of Indianapolis in 1867.

In obstruction of the cystic duct there is occlusion, or stenosis. In the first the closure is complete: in the latter less complete. These conditions are dependent on foreign bodies within the duct, or upon some disease or thickening of the walls, or the presence of pressure from a tumor without. The most common cause is an impacted gall-stone in the cystic duct. If the cystic duct alone is obstructed, the office of the gall-bladder is destroyed; this leads to various changes. The bile in the gall bladder is absorbed and its place is supplied by a glairy fluid of the consistency of mucus or synovia, often so abundant as to fill the gall-bladder, and sometimes greatly distend it; it becomes a thin walled cyst holding several pints. It is now completely cut off and no longer available as a receptacle for bile; its nutrition impaired, changes in structure follow, with the phenomena inflammation and ulceration. These changes are local, for a stone lodged in the cystic duct can by no possibility produce jaundice; its presence will only prevent the bile from passing in or out of the gall bladder.

How are we to know whether or not the cause of obstruction is an impacted gall-stone? The diagnosis is positive when the patient passes a calculus; before this occurs our data are probabilities. If the following symptoms are present in a case—violent pains in the right hypochondrium, shooting through the whole abdomen up to the chest and right shoulder, nausea and vomiting seldom absent, these symtoms occurring at longer or shorter intervals, with an entire absence of jaundice—we may safely predict the presence of a calculus in the gall bladder.

Gall stones *may remain in the* gall bladder for an indefinite time without the least pain; at other times there may be present the most dangerous symptoms such as I have described, without the slightest trace of jaundice. *When impacted in the cystic duct,* then the suffering becomes intense, and so long as it remains, although no bile can enter into the gall bladder or escape from it, yet it offers no obstacle to the direct flow of the biliary secretion from the liver into the intestine. So long as this impaction remains the patient is in the condition of a person upon whom cholecystectomy has been performed.

The office of the gall bladder is to act as a diverticulum and a receptacle, and contains the excess of bile secreted during the intervals of digestion; aside from this it is non-essential; it is absent in many instances, in several animals, such as the horse, the deer, the elephant and in many birds, such as the ostrich and the parrot.

Budd says the effects of the closure of the cystic duct, on digestion and the general health, are much less serious than might be expected, and are sometimes of very little import. Dr. Alexander Simpson report a case in the *Edinburg Medical Jaurnal*—of a child in whom no trace of a gall bladder was found at the autopsy.

How can we account for the presence of pain when a calculus is impacted in the cystic duct? The solution readily presents itself, if we remember that the gall bladder is provided with a muscle, and that it must contract with increased force to overcome the resistance offered by the calculus fixed in the cystic duct, just as the urinary bladder contracts with increased energy when a calculus is arrested in the canal of the urethra, or the ureter contracts when a renal calculus travels along it to the bladder.

What is the condition of the gall bladder when digestion is going on in the stomach? It is full of bile and it empties itself by a powerful contraction while the digested food is passing through the duodenum.

No one perhaps stated the cause of hepatic colic more clearly during digestion than Bartholow. He asserts that common observation shows that the symptoms of hepatic colic usually declare themselves in two or three hours after a meal. At that time when the presence of the chyme in the duodenum solicits the flow of bile, the gall bladder contracts on its contents in direct ratio to the amount of bile present, and with the gush of fluid the concretion is whirled into the duct.

The muscular tissue having undergone hypertrophy—owing to the efforts to overcome the obstruction dependent upon the impacted calculus, the paroxysms of pain are more likely to occur at this time than any other, and the persistent and unyielding obstruction will produce the distension and enlargement of the gall-bladder already alluded to. There is yet another difficult problem to solve—why is it that in some cases we have distension augmented until the viscus descends even to the iliac crest, containing pints of fluid, while in other cases, a much less frequent occurrence, we find atrophy of the gall bladder contracting and embracing the calculus. Rokitansky believes that its obliteration is frequently consequent upon inflammation.

The enlargement of the gall bladder is largely due to the presence of the mucus secretion from the lining membrane of the gall bladder itself.

There came to my office in the month of December 1890, Mrs. C., aged 34, from Colorado. She complained of pain in in the right hypochondriac region and shoulder; it was increased by violent exercise. There was present also headache and diarrhœa; she was pale and emaciated. She described her sufferings as follows: excruciating pain lasting several hours, usually occurring two hours after meals. The relief was as sudden as the attack. After the paroxysms of pain the tenderness was felt for several days. Not the slightest evidence of jaundice was ever present. There was nothing abnormal in the urine. Upon examining the abdomen I found a tumor to the right of the umbilicus and with its lower part upon the brim of the pelvis. Its shape was pyroform. In size as large as the largest pine-apple. It was free from tenderness. The treatment had been medical only; numerous remedies were tried without affording her any relief. She came to consult me with reference to the possibility of a surgical procedure. I stated to her my diagnosis: that her trouble resulted from calculi in the gall bladder with possibly obstruction of the cystic duct causing distension, that the painful paroxysmal aggravations were due to this cause, and if left alone my prognosis was that a fatal result would inevitably follow. She consented to an operation, and on Dec. 11, 1890, at the St. Joseph Hospital, after observing minutely the special antiseptic precautions which precede laparotomy, general anæsthesia was induced by the inhalation of ether; afterwards the patient was placed upon the table suitably prepared, and the abdomen cleansed. An incision four inches in length was made from the tip of the cartilage of the tenth rib down towards the fundus of the tumor. On reaching the peritoneum it was picked up by catch forceps, and the line of incision continued with scissors. An index finger was introduced to feel for the gall bladder. It was easily discovered, and I was enabled to bring up the fundus with the fingers without the use of the forceps; and lodged in the wound. Its size was diminished by aspirating. Sponges were carefully packed, to receive whatever fluid might escape during this part of the operation. I used catch forceps, seized the fundus at the upper and lower portions, and incised it, inserting my finger to feel if any calculi were present; discovered there were, and removed six of them impacted in the cystic duct. They were removed by using a small scoop and forcep. The gall bladder was now drawn freely into the wound, and the edges of the abdominal wound and the gall bladder were closely kept together by an assistant. The edges of the wound in the gall bladder were sutured by a continuous thread of carbolized silk; this done the bladder was washed out with warm water and a careful search made for calculi; none were found, after which a drainage tube was inserted, and iodoform dressing applied.

The fluid was glairy mucus; the evidence of bile wanting. This, in connection with the quantity—several pints—clearly indicated that the obstruction had existed a long time. I allowed the drainage tube to remain until the 24th day of December. No bile escaped from the wound during or after the operation. A fistulous opening remained and continued to discharge mucus for several months. All my efforts to close it were only partially successful, for if closed for a week or ten days, she complained of fulness and pain over the region of the gall bladder; but when a discharge took place it was followed by relief. At one time when the closure existed longer than usual she concluded to visit Buffalo in the month of April to consult the eminent surgeon Dr. Park. He, after an examination, advised her to return and renew the opening first made, and pack the gall bladder with iodoform gauze. I followed his suggestions but failed to obliterate the cavity. I now attempted by various methods to change the interior of the gall bladder by using injections of compound tincture of iodine, tanin, gallic acid and nitrate of silver. I thus reduced the cavity until it held only a half drachm. It seemed almost closed when she left me for her home. Her general health was marvelously improved; she was free of pain unconfined; exercised freely without exciting any of the symptoms that previously distressed her; even with her improvement I was compelled to listen daily to her complaint concerning the slight stain upon the dressing; but I consoled myself that the varying quality of mentalization is due to the fluctuations in the activity of the hepatic function, and that many a dark ecclesiastical dogma about man and God, have had their origin in the cystic duct.

I firmly believe after reading the lamentations of

Jeremiah when he exclaims "My bowels; my bowels," "I am pained, I cannot hold my peace. My liver is poured upon the earth," I believe that he had obstruction of the cystic duct, and that Jonathan Edwards was afflicted with jaundice when he wrote his ghastly sermons on eternal damnation. George Sand thus afflicted exclaims, "Since my disease first appeared, I have had happy years, and when it seized me again, although I was in the condition most favorable to love of life, I felt myself suddenly seized with a desire for eternal repose."

After the digression it remains for me now, only to present for your consideration the question, "whether in cases where the gall bladder is filled with mucus dependent upon continuous obstruction of the cystic duct—it were not better to perform cholecystectomy? I wish here to emphasize the fact that the cystic duct is often closed by adhesive inflammation, and that it remains closed in such cases after the calculi are removed. In support of this view I will quote from Budd, who says, "A gall stone too large to pass through the duct floats with the current of the bile, to its mouth, and becomes firmly lodged there, and generally leads to lasting closure by adhesion beyond the stone, the effect being closure of the cystic duct."

In another case such as the one reported I would ligate the cystic duct at two points, and divide between them, and as the gall bladder has ceased to be a receptacle for bile, I should remove it. We remove the ovaries when they become cystic, also the spleen and the kidney, and why not the gall bladder?

LATE MANIFESTATIONS OF APPENDICITIS AND THEIR TREATMENT.

Read in the Section of Surgery and Anatomy, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY DUDLEY P. ALLEN, M.D.,

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The late manifestations of appendicitis are so frequent and so serious that it would seem to me that the discussion by this distinguished body would be of interest and benefit. The question of operation in primary attacks has within recent years received wide consideration at the hands of American surgeons, and the operation has been placed upon a lasting and scientific basis. Witnessing cases which have not thus been operated, together with the serious complications which have succeeded, after apparent recovery from the local disease, I have been further impressed with the correctness of the position which has been taken in favor of early operations. I have recently had an opportunity for conversing upon this subject with a large number of prominent surgeons of Europe, and have repeatedly met the expression that with them in Europe, appendicitis does not seem so serious, nor to demand operation so frequently as has been recommended by American surgeons, and the opinion was expressed that it was safer to leave cases of appendicitis to pursue their natural course without operation or surgical interference.

As I recall the cases of appendicitis which I have seen in consultation both before and since early operation has been advocated, I am strengthened in my opinion that the natural history of the malady, both in its primary attacks and subsequent history, is so serious as fully to warrant the position taken by American surgeons in favor of early operative interference.

For the introduction of this discussion I have selected six cases, each differing from the other, as perhaps the best means of presenting the subject. I have purposely selected as few cases as will serve this purpose.

The first case is one of the most common of those in which repeated slight attacks of appendicitis have ultimately eventuated in one of serious import. The case was A. H., æt. 21, with good family and personal history. He had repeatedly suffered from abdominal pain, which he supposed to be colic. On May 3, 1892, he had a similar attack, and went to his office in the morning but returned home in a few hours. He vomited and the pain continued, but the patient simply laid upon the sofa and did not take to his bed until perhaps thirty hours after the beginning of the attack. His temperature and pulse remained normal. His bowels moved with a saline, on the second day of the attack. On the third day of the attack there was some tympanitis and tenderness upon the right side, but the pain did not become localized in the region of the cæcum until the fourth day, and at that time his pulse was normal and his temperature was 99. On the fifth day the temperature and tympanitis increased slightly, while on the sixth day the evening temperature had reached 102 1-5, and the region was extremely tender. On May 10, the seventh day of the attack I was called to operate on the case by my friend, Dr. Boyd, of Akron, meeting in consultation Dr. Boyd, Drs. Jacobs, Sr. and Jr., and Dr. Hoover. I found the patient's abdomen considerably distended and very tender. There were dulness and resistance in the region of the cæcum. The pulse was 80 and the temperature 100. At 10 A.M., I operated, evacuating perhaps 8 oz. of pus. I found a gangrenous appendix containing a concretion. In the removal of the appendix the abdominal cavity was opened in two places, the presenting intestines were kept thoroughly flooded with water and were subsequently held back by tampons of iodoform gauze. The progress of the case has been satisfactory in every respect. The interesting feature of this case is that the attack of appendicitis which eventuated in a large abscess, seriously threatening the patient's life, did not differ primarily from what he had considered simple attacks of colic, and it is not at all improbable in my mind that the previous attacks of pain had the same origin as the last.

The second case was of Mrs. H. F., æt. 30, a woman of medium size and well nourished. On Sept. 9, she complained of pain in the abdomen, but did not locate it in the right side until the day following. The second night she took a tablespoonful of Carlsbad salts, and had a free evacuation upon the morning of the third day. On the same day she was seen by Dr. Bock, who administered a cathartic and applied fomentations. The temperature previous to the sixth day of the attack did not exceed 101, but afterwards rose gradually until Sept. 20, eleven days after the beginning of the attack when the evening temperature was 104. The patient had had no chill or vomiting, but had had slight nausea. I first saw the patient on Sept. 20, the eleventh day of the attack, and found her very tympanitic, with temperature 105; the abdomen was not tender. On the right side from the cæcum upward toward the ribs was dulness, though there was resonance on deep percussion. The skin was somewhat discolored, due as it was supposed, to external applications. There was an indistinct sense of fluctuation, but all local symptoms were rendered less prominent by reason of great general tympanitis and local tenderness. An examination the following morning under an anæsthetic showed fluctuation to be distinct. On Sept. 21, twelve days after the attack, in the presence of Drs. Carl and Herman Bock, and Dr. Krause, I operated upon the patient. Just previous to the operation temperature was 103½, the pulse was fairly strong, and the bowels had moved several times with a passage of considerable flatus. On dividing the abdominal wall in the region of the cæcum fully two quarts of black ichorous fluid were evacuated, and with it large masses of broken down gangrenous tissue. The peritoneal cavity was not opened. The abscess cavity extended from under the ribs above to Poupart's ligament below. The patient endured the operation well. The same night she was in excellent condition. At 2 A.M., the following morning she told Dr. Bock, who spent the night with her, to go and lie down since she did not need him, and would call him if required. Some time later he noticed that her breathing was labored, and within an hour she was dead

At the post-mortem examination the abdominal cavity was found free from inflammation. The vermiform appendix had wound around the head of the cæcum and was lying posteriorly and to its right side pointing upward toward the liver. Its exact length could not be determined since its extremity was entirely destroyed by gangrene, but the portion remaining measured five inches. No cause of death could be found in lungs, liver, heart or kidneys. Though this case should more properly be classed with those in which the abscesses developed with a primary attack, it nevertheless exhibits in a most emphatic manner the enormous extent to which abscesses the result of appendicitis may burrow upward and downward before entering either the abdominal cavity or reaching the surface, and serves to emphasize the importance of earlier operation.

The third case is of B. M., æt. 34. He had always been strong and well until October 5, 1891, when he was seized with pain in the lower part of the abdomen. He was under the care of Dr. O. B. Campbell, who called me to see the case on October 10. Unfortunately my notes upon the case are not very full, but I found him somewhat tympanitic, with unmistakable evidences of an abscess over the cæcum. The next morning, with Dr. Campbell and Dr. Nevison I opened the abscess and removed the vermiform appendix without opening the abdominal cavity. The cavity was washed and packed with iodoform gauze. The subsequent history of the case was favorable and healing was rapid. On February 13, 1892, patient visited my office and said he was well. Immediately thereafter he resumed his daily work. About May 1, he came to my office and told me that after working about two weeks he began to feel badly; and developed a serious cough. At this time he was coughing frequently and expectorating considerable quantities of material closely resembling anchovy sauce. He was carefully examined by Dr. Edward F. Cushing, who reports as follows: "You will find in the left back dulness, with absence of fremitus and feeble breath sounds. Below the eighth rib is a narrow strip of bronchial breathing with increased voice sounds above; similar sounds in the lateral and anterior aspects of the chest; heart is not displaced but I expect an exploratory puncture would discover pus and that his purulent expectoration represents an empyema broken into the bronchial tube. The expectoration I have not examined, but it is chocolate color and strongly suggestive of hepatic origin, though I did not discover any especial enlargement of the left lobe of the liver." The expectorated pus closely resembled in color anchovy sauce, spoken of by Osler as indicative of liver origin. My own examination had previously led me to a similar conclusion as that of Dr. Cushing, and after observing the extent to which the case previously described had burrowed upward in the direction of the liver, together with other cases of a similar sort which I have seen, I have no question that the conclusion arrived at by Dr. Cushing is the correct one. Unfortunately, I have not had further opportunity of observing the case. Though the primary operation in this case was apparently completely successful, its further history renders it probable that an earlier operation might have wholly averted its serious secondary manifestations.

The fourth case was of F. H.. male, æt. 23 years. Previous to 1877 he enjoyed good health. That fall he had what was called inflammation of the bowels, accompanied by vomiting and pain, chiefly in the cæcal region. He seemingly recovered from this attack, but six weeks later had another. These attacks recurred at intervals of about six weeks, accompanied by vomiting and pain in the cæcal region and occasionally attended by chills. In 1881, four years after the primary attack, patient thinks he passed some pus, per rectum, but never noticed it at any other time. In 1883 the patient was kept quietly at home on one floor during six months, in hope of curing his malady by rest. Much of the time was spent in bed. In 1889, twelve years after the primary attack, the patient was laid up in bed for two weeks. For nearly six years he had suffered from repeated attacks of vomiting with pain in the right side of the abdomen, the attacks being accompanied by tenderness and often by a chill. Until I saw the patient in Sept., 1889, no diagnosis of the case had ever been made. Just inside of the anterior superior spinus process of the ileum I could find, on deep pressure, a small resisting mass; pressure produced pain. I gave him a cathartic. On the day following, I saw him in consultation with Dr. H. K. Cushing. A very small indurated mass could still be felt deep in the right iliac fossa in the region mentioned. An operation was agreed upon, and this was performed in Charity Hospital on Feb. 7, in the presence of the House Staff and Dr. N. Stone Scott. A curved incision was made to the inner side of the right anterior superior process of the ileum. The cæcum was pushed inward and the abdominal cavity was not opened. In the iliac fossa, wholly posterior to the cæcum was found a cavity containing pus. The cavity measured about one-half inch transversely, and extended from a little above the spine of the ileum downward to Poupart's ligament. This was cleared, washed and packed with iodoform gauze. The progress of the case was very satisfactory, and the patient has been entirely well since the operation and free from the attacks of pain, fever and chills, which previously had wholly incapacitated him for business, and although a small sinus has remained unclosed, the patient has been able to fill an important business position, and has enjoyed good health. The striking feature in this case is that a young man during twelve years should have passed through the hands of several physicians, having chills and attacks of vomiting and pain referred to the region of the cæcum, during this time being largely incapacitated for business, without his malady having been diagnosticated or an operation proposed for his relief.

The fifth case is O. L., male, æt. 19. He had good health and has a good family history. In December 1891 patient was seized with pain in the region of the cæcum, and was sick for 7 weeks, his temperature reaching 103. Most of the time patient was in bed. At the end of this time he was beginning to move about when he had a relapse and from that time until operation there were frequent attacks of pain in the region of the cæcum. The bowels were regular during this period. April 26, 1892, I first was asked to see the case, by Dr. Upson of Conneaut. The abdomen was flat, and to secure satisfactory examination, he was placed under an anæsthetic, since without it he resisted deep pressure. Dr. W. J. Scott examined the case with me. Upon deep pressure, a distinct resistance could be felt in the region of the cæcum, extending a short distance upward. Under an anæsthetic the right leg could not be fully extended, and when the patient walked, he inclined markedly to the right side. It was evident that the psoas and iliacus muscles did not permit perfect extension. May 12, I operated at Charity Hospital, in the presence of Dr. Upson of Conneaut, Dr. Bagot of the Rotunda Hospital, Dublin, Dr. Nevison, and the House Staff. An incision through the right linia semilunaris was made from the level of the anterior superior spinus process of the ileum upwards. The peritoneal cavity was opened by an incision 5 to 6 inches in length. The head of the colon was examined, but there was no vermiform appendix to be found free in the abdominal cavity. Slight induration, but no fluctuation could be felt behind the cæcum. The cæcum was drawn toward the median line and dissected from the iliac fossa, when the finger entered a small cavity perhaps ¾ of an inch in diameter, extending vertically for about 5 inches, its lower extremity being nearly down to Poupart's ligament. A very small amount of inspissated pus was found and in it was a small concretion from ½ to ¾ of an inch in diameter. The entire length of the sinus could not accurately be determined since at either extremity its calibre was small. Remains of the appendix were not found since it would have increased the dangers of the operation to have persisted in searching for them. The patient's condition was very weak, and his pulse rapid before the operation, and though the operation seriously taxed his strength. his progress has been on the whole, very satisfactory, and he is now up and about, and seemingly on the road to recovery.

The sixth and last case is one of extreme interest, and one in which I have only been lead to a diagnosis after operating upon a number of similar cases. The patient, F. H., was about 35 years of age. He had always enjoyed good health. On November 26, 1889, patient was feeling very well. His physician, Dr. Sabin, of Warren, gave him a cathartic and the next day patient felt better, and the night of the second day, attended a lodge meeting where he was seized with intense abdominal pain. He reached home with great difficulty, and soon afterwards vomited. He was most comfortable lying in bed with his legs flexed. The pain was general over the abdomen; hot application gave no relief, but Dr. Sabin secured relief after one to two hours by the application of chloroform. Patient's bowels moved with saline, and the highest temperature was about 101½. A week after the attack, patient walked to his office. The patient was up and about until December 15. and on December 16, Dr. Sabin could find some tenderness in the region of the cæcum, though there was no tumor. Temperature that evening was 102, and the highest temperature reached before I saw the patient was 103. December 31, about five weeks after his first attack I saw the patient with Dr. Sabin. He bore the appearance of one long sick, and was thin and sallow, and was having severe night sweats. Though when well patient had slept upon his face, he now sleeps best upon his right side. When he turns to the left side, he must prop up his abdomen with a pillow, otherwise he feels a dragging sensation in the right side. When lying upon his back he can straighten his legs without pain, His bowels have moved regularly; he has had no chill, but early in the evening has wanted to be warmly covered. On examination there was no unnatural fulness anywhere. In the region of the cæcum there was no induration but there was some tenderness on deep pressure. The diagnosis of appendicitis was made and an operation was advised, and for this purpose the patient was brought to Charity Hospital in Cleveland, on January 3. At this time he was seen in consultation by Dr. H. K. Cushing, Dr. Sabin and myself. Since I had seen him in Warren, the tenderness in the right iliac region had wholly disappeared. The patient also said he had some pain at the base of the lungs, and some dulness could be discovered at this point. The change in symptoms led us to defer the operation, and on January 7 the patient was seen in consultation by Drs. H. K. Cushing, W. J. Scott and myself. The conditions remained the same as on the week previous, and the diagnosis of appendicitis was thrown so much into doubt by the disappearance of pain in the region of the cæcum and the appearance of dulness at the base of the right chest that operation was still deferred. The evening temperature had ranged from 103 to 104. As time progressed there was a gradual increase of dulness in the right side corresponding to the right lower lobe of the lung, accompanied by slight broncophony, a few moist râles and cough with some purulent expectoration. In Febuary, the patient's condition gradually improved, the region of the cæcum remained free from pain and the temperature did not exceed 102 and it seemed not improbable that it was an obscure case of tuberculosis. This opinion gained strength since there had been cases of tuberculosis in the family. On February 14 I saw the patient at his home in Warren. The condition of the lung seemed slightly improved, but the patient was much the same. On March 16, I again visited the patient in Warren. The dulness in the chest had increased slightly, and there was an absence of respiration at the base. For the purpose of exploration an aspirating needle was inserted; though inserted but a short distance and in the usual manner, there immediately followed a most copious discharge of blood from the mouth, which came near suffocating the patient. He recovered from this however, and seemingly improved. The winter of 1890 and 1891 the patient spent in the South, troubled with a cough and expectoration, and it seemed probable that the case was one of tuberculosis. He gradually improved, however, and was able to do some professional work, which was that of a lawyer. Later however, he developed trouble in the right leg and on October 1, I opened an extensive abscess of the right leg. These abscesses formed repeatedly, extending from the knee almost to the groin, and have been repeatedly opened by Dr. Sabin. In January of the present winter patient's condition was so low that it was supposed that he could live but a few days; he has however improved considerably. From a further study of the subject of appendicitis and experience gained in operating upon these cases, I am convinced that this case was primarily one of appendicitis. Though the local manifestations were followed by extension of the abscess upward either by absorption or directly to the right thoracic cavity, subsequently the progress of the disease has been downward, and the right thigh has been involved in repeated and extended suppuration. The grave error in the case was that it was not operated when first seen, as a case of appendicitis. I do not believe that tuberculosis ever played any part in the case.

It is unnecessary for the purpose of this paper to multiply further cases. Though I might cite others pointing to the same conclusion, those cited are sufficient in number to demonstrate the fact that cases accompanied by pain in the region of the cæcum with tenderness and perhaps vomiting, though there is no apparent temperature or collection of pus are of extreme gravity, and as positively demand operations as those in which collections of pus are evident.

The question remains, how are such cases to be operated. I have tried both the extra-peritoneal and the trans-peritoneal method. Though it is of course desirable to avoid the opening of the abdominal cavity when possible, and though I have repeatedly succeeded by this method in relieving a deep seated appendicitis, there are many cases in which operations must fail unless the abdomen be opened, for without it, the whole region of the cæcum cannot be thoroughly examined, and the danger of tearing the tissues about the cæcum, for the purpose of locating an appendicitis, accompanied by very slight collection of pus, is greater than freely to open the abdominal cavity, find the cæcum, locate the seat of the appendix and open the inflammatory mass which may contain only a small amount of pus with perhaps a gangrenous vermiform appendicitis, and a foreign body. During the operation the abdominal cavity may be shut off by means of tampons of iodoform gauze, and when the inflamed mass is opened, by means of a stream of water from a fountain syringe, all inflammatory material may thoroughly be washed away, and the abdomen kept free from contamination. A good way of dressing the wound is to carry a large drainage tube down to the point of inflammation and then thoroughly to pack the opening about it with iodoform gauze, By these means, the abdomen is kept closed from infection, the free discharge of pus through the tube is insured, and the iodoform gauze packed about the tube will upon its removal, leave a passage for the discharge of material from the inflamed cavity.

As to whether such operations should be performed in the intervals between attacks or only when an attack is in progress cannot be answered by any general statement. Each case must be decided upon individually. There are many cases however where there are chronic inflammatory conditions, such as several which have been cited in which operative interference offers the only opportunity for cure which can rationally be expected and in such cases I am strongly of the opinion that the seat of disease should be sought out without awaiting the occurrance of an acute attack. Since such operations are a severe tax upon the patient his opportunity for recovery may be enhanced by an operation performed in his interval between attacks, when his general condition and strength are better.

REPORT OF A CASE OF GUNSHOT WOUND OF LIVER AND STOMACH. LAPAROTOMY. RECOVERY.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JAMES T. JELKS, M.D.,

OF HOT SPRINGS, ARK.

Formerly a Member of the State Medical Society of Georgia; a Member of the Southern Surgical and Gynecological Society, Mississippi Valley Medical Society, Chicago Medical Society, Hot Springs Medical Society, State Medical Society of Arkansas, American Medical Association; formerly Secretary of the Obstetric and Gynecological Section, American Medical Association; and late Professor of Surgical Diseases of the Genito-urinary Organs and Venereal Diseases in College of Physicians and Surgeons, Chicago, Ill.

Some time in April I received a note from Dr. Eugene Hay, saying he had a case he thought required a laparotomy, and asking me to come to him.

I responded, and found the doctor at what is known as "Dirty Six," a tough suburban resort. In a small cottage, lying on a bed, was a young man apparently 22 years old. He was resting very quietly, his face covered with sweat. Turning him partly on his right side, Dr. Hay showed me the wound of entrance—a bullet hole 3 inches to the left of spinal column and just at lower border of last rib. There was no wound of exit. He had vomited quite a quantity of blood. There was no tenderness; pulse 70 but quite soft, and as stated above, his skin was covered with sweat. I agreed with Dr. Hay that indications pointed to a laparotomy, and so advised the friends of the young man and the man himself. At first he refused an operation. Then stating the case to him as clearly as I could, telling him what the hæmorrhage meant, and what his prospects were both without and with the operation, he consented to have it done. This was about 3 A.M. We then proceeded to get ready as best we could. There was nothing in the house; we had to borrow the table, lamps, and even the hot water, from a restaurant across the street. So after boiling my instruments, I got everything in the best shape I could, and again asked him if he wanted the operation; he again consented, and was brought to the table. Dr. Hay gave the chloroform until the patient was anæsthetized, when it was turned over to Dr. How, and Dr. Hay assisted me.

The abdomen was then rendered as aseptic as we could make it with green soap, bichloride and ether, and by the light of the lamps I made an incision from the ensiform cartilage to the umbilicus, afterwards prolonging it about 2 inches below the latter point. All hæmorrhage was checked before the peritoneum was opened. When we entered the cavity of the abdomen some blood was visible, but not a great deal. At this time patient began to vomit blood, and during the straining the stomach was pushed out of the abdomen and lay in my hands; as it did so the bullet also appeared to the left of the median line, and lying loose. This was removed and handed to a bystander. I then carefully examined the anterior and posterior surfaces and the greater curvature, but could find no wound in the stomach. I then passed my fingers along the lesser curvature, but still could find no wound. Continuing my search, I found a bullet hole in the posterior edge of the liver, to the right of the aorta. By this time the flat sponges which I had used to keep the intestines in the cavity were with the latter extruded, and lay on the patient's abdomen. The intestines were carefully wrapped in warm towels and kept warm with boiled water, while I continued to search for other wounds. Finding none in the intestines, and being unable to stitch the hole in the liver, I wrapped a glass drainage tube in iodoform gauze and passed it down underneath the stomach, and placed it in the wound in the liver. This bag of iodoform gauze I packed with more gauze, thus ballooning it, and a strip of same material was passed down the tube into the hole in the liver. After this was done, I flushed the cavity of the abdomen with warm sterilized water by passing the nozzle of the irrigator down into the bottom of the pelvis and allowing the water to fill and overflow the abdomen. In doing so some clots and blood were washed out. I then proceeded to sponge out the cavity, getting it as dry as I could. During all this time Dr. Hay was assisting me, while Dr. How was giving the anæsthetic. When this was completed, we had great difficulty in getting the intestines back into the abdomen. Patient's pulse began to grow quite weak, and hypodermics of whisky and digitalis were given. Finally the abdomen was closed with sutures of braided silk, and coaptation sutures of plain silk, the drainage tube coming out at the upper end of the incision; the iodoform bag with its packing shutting off the abdominal cavity from the wound in the liver, and also from the posterior surface of the stomach.

I saw the patient a few times afterwards with Dr. Hay, and for the subsequent data I am indebted to him.

The glass drainage tube was removed on the third day, and on the fifth the iodoform gauze was taken out perfectly sweet; drainage of bloody serum had been perfect. Into the place of the large bag of gauze I now pushed, with the sterilized handle of a tenaculum, a strip of same material, and allowed it to remain several days. This latter was removed by Dr. Hay and the hole closed with a suture.

Day after the operation temperature was 99° in the morning and 100° at night. During the next day he had considerable pain in the abdomen, with tympanitis. We now gave him saline purges until his bowels moved some eight or ten times, with entire relief of the tympany.

During the next five days he was nourished by the rectum. He was allowed nothing by the stomach but crushed ice for three days, save the saline mentioned, when a little water was permitted. His temperature ran from 99° to 100° during the forenoon, and to 100° or 101° during the afternoon. On tenth day we removed the sutures and found perfect union, with one stitch hole abscess. Dr. Hay redressed the wound. The day after he telephoned me that the man had been coughing and had torn open the line of union. He visited him and found the line open for about 4 inches, with a knuckle of intestine protruding. This he replaced. There were adhesions between the parietal and intestinal peritoneum throughout the remainder of the open wound. These he separated with his fingers and put in several sutures through all the tissues, and brought the wound together. The patient stood this without an anæsthetic. These stitches were allowed to remain in place for two weeks, when they pere removed, the line of union being found strong. The wound was now covered with aristol and carbolized gauze, and several adhesive plasters strapped the latter in place, thus supporting the parts to prevent a new rupture.

During the healing process patient complained of a constant pain in one spot in the line of incision, which I think may be explained by the adhesions which had been formed. At the end of three weeks the young man was well, and in four weeks was up. He now has no trouble save some "bloating" of the abdomen from gas.

Discussion.

Dr. Christian Fenger, of Chicago, in opening the discussion, said the main feature in wounds of the liver is undoubtedly the hæmorrhage, and this is probably better stopped by packing the wound with iodoform gauze than in any other way. Ligatures will not, of course, hold in the liver substance. He had seen one instance of subcutaneous rupture of the liver, and in operating for a tumor of the abdominal cavity a year after the infliction of the injury, the wound in the organ was still visible.

Dr. E. H. Gregory, of St. Louis, wanted to know whether, in Dr. Jelk's case, hæmorrhage was going on at the time of operation. Being answered in the affirmative he said, that though he thought the operation was not wrong for it fulfilled what seemed to be the indications, he, as a conservative surgeon, would like to know whether the man might not have recovered by his line of treatment, viz., by leaving him alone. He believed that by following this course, we should have had another case of recovery without operation.

Dr. Thorn, of Toledo, reported a case in which there was a small laceration in the liver, and the patient died from loss of blood. He believed operation would have saved his life.

Dr. D. A. Watson, of Jersey City, had seen a great many cases in his experiments on animals, and in a vast majority, even though the laceration was very extensive and the wound filled with blood, the animal recovered, except were the main arteries were involved. He thought danger lay in the fact that the bullet might carry septic material into the abdominal cavity, but beyond this he believed we are more afraid of lacerations of the liver than we have any just right to be.

Dr. Murdoch, of Pennsylvania, defended the operation on the ground that a surgeon would feel that he had not done his full duty if he did not open the abdominal cavity and notwithstanding what might be said about the innocency of a bullet in the cavity, he thought any man would rather have it out.

Dr. Gregory did not wish it to be understood that he objected to the operation, in fact, he might have been betrayed into doing it himself, though he felt sure he would regret it later. He thought that the bullet left in the cavity would have done less harm than the operation.

Dr. Griffin, of Missouri, reported three cases of gunshot wounds of the abdomen which he had seen within the last year and in all of which he had operated.

Dr. Walker, of Tennessee, reported a case in which the patient refused operation. The autopsy showed anterior border of liver torn to shreds. Patient died of hæmorrhage.

Dr. McIntyre, of Missouri, said there was no shadow of doubt that men did get well who had these injuries, but he congratulated Dr. Jelks on the success of his operation and thought that a ball rolling about in the cavity of the abdomen would not be likely to become encysted.

Dr. Dolan, of St. Louis, thought no surgeon would refuse to operate where there was vomiting of blood as in Dr. Jelk's case. He could not see how this symptom could occur if the stomach were not punctured.

Dr. Palmer, of Wisconsin, considered the case to be one of those cases in which it is the absolute duty of the surgeon to operate.

Dr. Quinby, of Jersey City, said it was his rule to operate when there was a foreign body where it might do harm.

Dr. Jelks felt sure that if Dr. Gregory had been called to the case he would have diagnosed gunshot wound of the stomach. The surgeon's duty is to offer the operation and if accepted he must do it. If we wait twenty-four hours before operating we have passed the golden opportunity. Statistics show 63% of deaths in liver wounds. Experiments have demonstrated that the blaze of fire renders a bullet aseptic. The harm is done in its passage, not after it has stopped.

SOCIETY PROCEEDINGS.

American Otological Society.

Twenty-fifth Annual Meeting, held at the Fort Griswold House, New London, Conn., July 19, 1892.

(*Continued from page 142.*)

It seems unaccountable that only one of these cases resulted fatally when it is known that any considerable quantity of dead bone in the vicinity of the brain, may induce fatal cerebral disease. The author did not think it proper to attempt the removal of dead bone where the meninges are in danger of being encroached upon.

Numerous cases are on record (one in the author's book) where a considerable portion of the bone has separated leaving an uncovered meninges without fatal consequences. Moreover when all dead bone is removed, reparative action does not commence until a new barrier of dead bone has been established.

B. Alexander Randall, M.D., of Philadelphia, read a paper entitled

PRELIMINARY NOTES ON CRANIOMETRIC STUDIES IN RELATION TO AURAL ANATOMY.

The author referred to the numerous careful studies made of the temporal bone with special relation to operative procedure and the conflicting results of Koemer and Schultzke as to a relation between the cranial index and the dangerous position of the lateral sinus and the middle cerebral fossa. Recognizing from the first the need of more extensive examinations, he had been accumulating data bearing on the matter, and offered now a preliminary report principally to secure criticism of his methods. Only 122 skulls, 73 broad headed, 33 long headed and 16 medium in index were used in the tabulation, and the only clear showing was that maximum or minimum dimensions might be found on either side and in any form of skull. The greater danger of the right side and of the brachycephalic skull receive slight confirmation, the cerebral fossa being actually more often lower on the left, but no deductions should be attempted from so small a series of studies, and any indications are probably worthless which are derived from less than one thousand skull measurements.

Dr. Charles J. Kipp, of Newark, New Jersey, reported a case of purulent inflammation of the middle ear with double optic neuritis and other symptoms of intra-cranial lesion, but without tenderness of the mastoid process, in which the opening of the mastoid cells was followed by rapid subsidence of the optic neuritis and cure of the disease.

Particular attention was called to the absence of tenderness over mastoid even on percussion, and to the desirability of repeated ophthalmoscopic examination in prolonged middle ear disease.

Dr. C. J. Blake, of Boston, read a paper entitled

MASTOID CASES.

Of 25 cases of mastoid congestion and inflammation seen in the first six months of this year, 3 were treated by continuous gold coil, with excellent effect. The remaining 22 cases came to operation at various stages of the mastoid disease and with various complications. Two cases died, one on the 9th day, complication with pneumonia, and the other on the 10th day with meningitis from extension of the suppurative process from the middle ear through the tegmen lympani.

Dr. H. Knapp, of New York, read a paper entitled

CASE OF CHRONIC PURULENT OTITIS MEDIA, OLD PULMONARY TUBERCULOSIS, OPENING OF MASTOID, DEATH FROM ACUTE BASILAR MENINGITIS. AUTOPSY.

The patient was a healthy looking man, age 35 years. About the middle of April 1892, he began to complain of headache apparently due to neuralgia. This however, was succeeded by slight elevation of temperature, but no change in the pulse, no tenderness over the mastoid, pupils normal. By April 27, there was drowsiness with nervous movements of the hands. Meningitis dependent upon aural disease was diagnosed by the attending physician. The patient was seen by two prominent neurologists who diagnosed cranial abscess from ear disease. The speaker saw the case May 3. There had been discharge from the right ear for three years, which had ceased during the previous week; temperature 102.2. Headache, stupor, incoherent difficult speech, delirium, pupils and fundus normal, no painful spot on percussion of skull. The diagnosis was concurred in and operation urged, which was done next day. The mastoid was found sclerosed throughout. The superficial portion of the bone presented some evidences of disease, but the deeper the bone was exposed, the healthier it appeared. The operation was then suspended. The patient continued to sink and died a few days later.

The autopsy showed marked evidences of basilar meningitis. The lungs were then examined and distinct evidences of pulmonary tuberculosis found. The patient had presented no symptoms suggesting examination of the lungs and all the indications pointed to cranial suppuration following aural disease.

Dr. J. B. Emerson, of New York, read a paper entitled

A CASE OF PYÆMIA FOLLOWING ACUTE SUPPURATIVE OTITIS. RECOVERY.

A. D., female, 24 years of age, admitted to Manhattan Eye and Ear Hospital, April 4. April first, pain appeared in the left ear, followed on the third by discharge. The ear trouble had followed grip. Temperature on admission was 100° pulse 104, free purulent discharge. No special tenderness over mastoid, no redness or œdema. The temperature to April 10, varied between 101° and 102°; April 10, morning temperature 101°, slight chill: evening temperature 105°, pulse 125. No pain except in back of neck. Tenderness much less over mastoid and left side of head, no redness or œdema over mastoid; ear discharging profusely. Condition continued about same until April 15, when evening temperature reached 105.4°, no redness, œdema or tenderness over mastoid, free discharge from ear, signs of septic pneumonia. The general condition of the patient continued to improve, but an abscess developed over the right sterno-clavicular articulation. Later a second collection of pus formed over the sternum. May 18, an abscess formed above the sternum. This was opened. May 29, swelling formed over left side of the neck. June 3 an incision was made into the swelling and pus found at a depth of one and a half inches; no direct communication with the mastoid could be found. Following this the patient slowly and steadily improved and was discharged August 4, the treatment extending over a period of four months.

Dr. T. Y. Sutphen, of Newark, N. J., read a paper entitled

MASTOID OPERATION IN A CASE OF MIDDLE EAR DISEASE WITH SEPTICÆMIC SYMPTOMS AND CEREBRAL COMPLICATIONS.

March 17, 1892, the speaker was called to see Miss B. K., æt. 16 years. There had been chronic otitis media of left ear for several years. For a few days there had been intense pain and a temperature of 105°. No sign of mastoid trouble other than the pain. The next day there were general septicæmic symptoms with chills, alterations in temperature and vomiting. A hard swelling beneath the sterno-cleido-mastoid muscle was discovered. May 22, the mastoid was opened; there was only a drop or two of purulent fluid. The condition of the patient continued very unfavorable until May 30, when pus began to flow freely from the mastoid wound, the temperature then fell to 99° and the patient made a rapid recovery.

Dr. Gorham Bacon, of New York, read a paper entitled

A CASE OF MASTOID DISEASE FOLLOWING AN OPERATION FOR THE REMOVAL OF ADENOID VEGETATIONS.

The patient, Annie R., æt. 30, came to the New York Eye and Ear Infirmary, Feb. 16, 1892. She gave the following history: She said that a physician had on Feb. 8, removed adenoid vegetation from the naso-pharynx, by means of the index finger and completed the operation the following day with forceps. She had a subacute pharyngitis at the time. Two days after the operation, she had severe pain in the right ear followed by a muco-purulent discharge on Feb. 16.

On the day of admission, she had a very anxious appearance, and had suffered from well marked mastoid symptoms for several days. She was immediately put to bed, and the Leiter coil applied, and the ear douched frequently with a warm boracic acid solution. Under the treatment the mastoid symptoms soon disappeared.

Feb. 23, a periosteal abscess on the right side was opened and about a drachm of pus escaped. An incision in a similar abscess on the left side gave a negative result. The patient made a good recovery and at no time did the temperature go above 100° F. The case was reported because the writer had not seen in the literature of the subject, any mention made of acute otitis media and mastoid disease following the operation for removal of adenoid vegetations. It is possible, however, that the carbolic acid solution which the patient was advised to syringe through the anterior nares by the physician before she came under the author's care might have had something to do with the etiology of the disease.

Dr. Samuel Theobald, of Baltimore, read a paper entitled

THE VALUE OF WEAK SOLUTIONS OF BICHLORIDE OF MERCURY IN THE TREATMENT OF OTITIS MEDIA SUPPURATION.

The author stated that boracic acid in fifteen grain solution was still, as it had been for some years, his first choice in the treatment of all cases of recent and in most cases of chronic otorrhœa. Boracic acid, however, occasionally fails to accomplish what is expected of it, and in exceptional instances aggravates rather than lessens the inflammation. It is in these cases that the speaker has recently used with very good effect, weak solutions (usually 1 to 8000) of mercury bi-chloride. The ear is simply syringed with the solution. Unlike some who have recommended the use of this agent in otorrhœa, he has not usually found it necessary to repeat the syringing more than once in twenty-four hours. Notes of several cases were given in which a prompt arrest of suppuration and disease of the perforation in the tympanal membrane followed the employment of the bi-chloride solution after boracic acid had been used without effect.

Dr. H. Knapp, of New York, exhibited a specimen showing perforation on the medial side of the mastoid, removed from a patient dying from cranial abscess.

Afternoon Session.

Dr. D. B. St. John Roosa, of New York, read a paper entitled

WOUND OF THE LATERAL SINUS IN THE COURSE OF MASTOID OPERATION FOLLOWED BY SEPTICÆMIA WITH RECOVERY.

The speaker remarked that there had been a number of cases reported in which the sinus had been wounded during operation, but that so far as he was aware, death had in no instance resulted from this accident.

The patient, a young lady, æt. 23 years, had for years suffered from recurrent attacks of suppuration of the left ear. It was thought that the mastoid was probably in a carious condition, and it was decided to open it, the drill being used. As soon as the bone was perforated the drill dropped into a large cavity, and the removal of the instrument was followed by a gush of venous blood which could not be checked by ordinary means. It was believed that the lateral sinus had been perforated. The wound was plugged with iodoform gauze. Four days later, when the wound was dressed, there was no trouble from bleeding. Symptoms of septicæmia then set in, but after two months of expectant treatment the woman made a complete recovery.

Dr. F. L. Jack, of Boston. read a paper entitled

REMARKABLE IMPROVEMENT IN HEARING BY REMOVAL OF THE STAPES.

In June, 1892, the author operated on a case of chronic suppurative otitis in a girl of 12 years. After removing portions of the membrana tympani, malleus and incus, examination showed the head of the stapes to be carious and it was decided to remove the bone. Previous to operation there was very little hearing in the affected ear. On the morning following operation the hearing was much better, and this fact suggested the possibility of good results from the removal of the stapes. Previous to this the speaker had operated on two cases of chronic non-suppurative middle ear inflammation by removal of the drum membrane, malleus and incus. The results as regards hearing were not satisfactory. Removal of the stapes is much better in its results and in the author's experience, there had been no operation was completed without misadventure and for a time the patient was in a promising condition. But his bronchitis increased and his heart weakened, and he died. The writer of the account states that this operation has been recorded not more than three times in all countries.

NECROLOGY.

Dr. Frazer C. Fuller, of New York City, lost his life in consequence of a fall from his horse, while at the State Camp at Peekskill. He was a member of a troop of militia and on summer camp-duty at the time of his injury, which was a fracture of the leg. A short time after his removal to his home pneumonia set in, followed by pleurisy and septicæmia. He was born in Boston in 1860. He was graduated from the Columbia College Medical Department about ten years ago. He was an interne at Bellevue Hospital for a year, and not long after was appointed to the visiting staff at Charity Hospital. He was prominent in the scientific work of the Neurological and Pathological Societies, and a frequent contributor to the medical journals. His accidental death was a most unexpected and mournful event to a large circle of acquaintances and patients.

Dr. Luther P. Kennedy, of Atlanta, Georgia, died early in June, at his former home at Due East, South Carolina. He was one of the editorial staff of the *Atlanta Medical and Surgical Journal*, and an assistant to the chair of obstetrics and gynecology at the Atlanta Medical College. He was graduated from Erskine College and a post-graduate student for one year at the Johns Hopkins University. His medical degree, obtained in 1887, was that of the New York University Medical Department. He spent a year or more in the hospitals on Blackwell's Island and elsewhere near New York City. The indications were unmistakeable that Dr. Kennedy would not only reach a high place in his profession, but also become a most effective medical teacher. He was a close observer and student and was able to impart his knowledge to others in a terse and forcible diction. His final illness was the result of an exhaustive attack of typhoid fever.

BOOK REVIEWS.

The Modern Materia Medica, for Pharmacists, Medical Men and Students. By Henry Helbing, F. C. S., London, Eng. Third edition. Lehn and Fink. 1892. New York. 8vo. 212 pages.

The claims of the publishers regarding this little handbook are that it contains the latest corrections and additions regarding the new remedies that come to us from Germany, chiefly. The new drugs, asaprol and diaphtherin—now about a month old—are among the articles described in this third edition. The older ones, concerning which new points of development have been brought to light, have been written up to date and the matured opinions of many observers introduced. Some of the more lengthy descriptions have been rewritten throughout in the light of recent clinical reports. The amount of patience on the part of the editor in his researches is evidenced by the fact that the index contains six hundred references to the chief new remedies and their synonyms. On this account the book makes itself especially attractive to the busy practitioner, and also to [illegible] professor or teacher whose memory is fickle on the points of coal-tar product chemistry.

Part II of this book, called an Appendix, contains notes of the non-synthetic remedies, and some others, that seem to require a less detailed description. There are tables of considerable value in the afterpart of the book, as Demme's dosage of antipyretics for children; solubility of the synthetic new remedies; melting and boiling points of those substances in centigrade degrees. The author adverts to the very persistent, though almost unavailing, search after a synthetic substitute for quinine, as the probable occasion of a vast number of serviceable medicaments, external as well as internal. He says "Since the time when the modern chemist first became fired with the ambition to win fame and fortune, at one stroke, by the synthesis of quinine, the number of remedies turned out yearly from the chemical laboratory has gone on speedily increasing, and if the original aim of the work is still unaccomplished—as the process of Grimmaux and Arnaud is but a partial solution of the problem—yet among the very considerable number of compounds produced, some have been found capable of replacing the natural alkaloid in many cases, while in others they seem to be even superior to it in therapeutical activity, reliability or safety."

The publications on materia medica, averaging as they do a book a month, are the most active present competition in the field of medical literature. Their volume is something unprecedented and well-nigh bewildering. This small treatise, on the contrary, has the advantage of clearness, compactness and singleness of purpose.

Transactions of the American Surgical Association, Vol. ix. Edited by J. Ewing Mears, M.D. Philadelphia: Printed for the Association by Wm. J. Dorman, 1891. Cl. 8vo, pp. 508.

Most of the addresses and papers in this volume have been printed in the current medical journals, and are already common property, but we have them here collected in one volume, thus constituting a series of surgical essays of the highest class, by surgeons of National reputation.

President Mastin, in concluding his excellent address, recommends the project of establishing a monument to the late Professor Samuel D. Gross. A statue at Washington is the form commended.

The necrology report includes biographical sketches of Dr. Truman H. Squire, Prof. v. Volkmann, Prof. v. Nussbaum, Dr. Richard J. Levis, Dr. David Prince, Prof. Chas. T. Parkes, Dr. T. B. Reed and Prof. H. J. Bigelow.

The volume should be found in the library of every progressive surgeon.

Prevention of Blindness in Rhode Island.—The following enactment was passed April 19, 1892, by the General Assembly of Rhode Island, its intent being to diminish the amount of ophthalmia neonatorum, and its sequels, which has its origin in grossly ignorant midwifery.

Section 1. Should any midwife, or nurse, or person acting as nurse, having charge of an infant in this State, notice that one or both eyes of such infant are inflamed or reddened at any time within two weeks after its birth, it shall be the duty of such midwife or nurse, or person acting as nurse, so having charge of such infant to report the fact in writing within six hours to the health officer or some qualified practitioner of medicine of the city or town in which the parents of the infant reside.

Sec. 2. Every health officer shall furnish a copy of this act to each person who is known to him to act as midwife or nurse in the city or town for which such health officer is appointed, and the secretary of State shall cause a sufficient number of copies of this act to be printed and supply the same to such health officers on application.

Sec. 3. Every person who shall fail to comply with the provisions of this act shall be fined not exceeding one hundred dollars or imprisoned not exceeding six months, or both.

Sec. 3. This act shall take effect July 1st, 1892.

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SATURDAY, AUGUST 6, 1892.

THE PRESENT STATUS OF THE TREATMENT OF POTT'S DISEASE.

The routine treatment of Pott's disease by this or that mechanical device can hardly be said to any longer obtain among orthopedic surgeons.

In choosing the plan of treatment for any given period it is customary to take into consideration the location of the disease, its tendency to destruction or progress towards repair, the severity of the symptoms, the complications, the age of the patient, the care which he may be able to command, and many other factors, such as materials at hand and the surgeon's skill and experience in working them.

The plaster jacket, applied during partial suspension, is still more widely used than either of the other means of immobilization. The materials are at hand or readily obtainable, so there need be no delay in its application, and the responsibility of its construction and perfect fit fall on the surgeon himself. On the other hand, it gives less perfect immobilization than a well fitting leverage brace, and if used without recumbency during the period of progression of the destructive process, cannot be relied upon to check the increase of deformity. Other corsets and jackets of plastic material are more difficult of construction and less effective in immobilization.

The antero-posterior leverage brace of soft steel grasps the pelvis above the greater trochanters, and the arms and upper chest above, and exerts as strong a leverage action as the soft parts will tolerate directly over the transverse processes of the vertebræ involved in the disease. When properly applied, it is probably the most efficient means of immobilization.

The cuirass (shellback) of steel and leather, gains something in effectiveness by extending its leverage to grasp the upper part of the thighs, but loses somewhat more in immobilization by distributing its leverage over the ribs, which are movable, instead of concentrating it upon the immovable transverse processes of the vertebræ. Each of the three plans aims to immobilize the area of disease by limiting the movements of the whole trunk, each supports more or less perfectly the superincumbent weight by leverage action, and diminishes the traumatism of the jars of locomotion. Used as ambulatory apparatus, neither fulfils all the indications for treatment in all cases.

It is no longer believed that traction made by suspension can be maintained by the plaster jacket or any other ambulatory apparatus, and all braces with crutch arrangements arising from a pelvic girdle have long since passed out of use. Traction, however, is still used to relieve pain and reduce deformity while patients are kept in recumbency in both stationary and portable beds, and thus used is a valuable agent.

The principles of treatment may be summed up as follows: Immobilize the area of disease continuously from the commencement of the treatment until a cure is effected; remove the superincumbent weight and avoid the traumatism of jars by keeping the patient recumbent until destruction has ceased and repair commenced; give good food, pure air and sunshine in abundance.

At another time we will discuss the treatment of the complications, namely: the deformity, abscesses and paraplegia.

GOLD CURE SPECIFIC.

The notoriety of this empiricism is rather a sad reflection on the general intelligence of the public, and also of many so-called physicians.

Charlatanism managed with psychological skill, assuming some discovery in science, that is a rational possibility, and covering up the real motives, is always attractive to the credulous and non-experts. But when it boldly proclaims theories outside the range of science and common sense, to be accepted entirely on faith, and the whole supported on a great pecuniary scheme to enrich the authors, it is difficult to understand how it should receive any serious attention. Compared with other empiric schemes, the bichloride of gold is very inferior in methods of management and assumed reality. It is the same old quackery, bold, ignorant and dogmatic, without a single original feature. The wild hysterical claims of cure by those who have used the secret remedy, is the same old story that is heard after every church and temperance revival. This posing as cured men by this or that means, with certificates from clergymen and others is common history in every community. It is a curious fact that mystery and concealment should add to its popularity, and still more unexplainable that both pulpit and press should be caught by such means. It is not strange that inebriates who have received benefit from the treatment should become enthusiastic as defenders of its merits, particularly when it is a pecuniary object to do so. The rapid growth of branch institutes for the treatment is purely commercial, and are managed in nearly all cases by so-called cured men. Precisely what the secret remedy is used under the skin, and other means, are of no interest except psychologically, and as phases of the evolution of the drink evil.

The success of the author financially in this country has developed the same boldness to conquer "other worlds." But, unfortunately, he assumed that entrance into societies and scientific support was a merchantable thing, to be bought. Also that the medical, as well as the secular press, was governed by public opinion, and ready to sell out when the price was offered. This was the "Waterloo for Keeleyism" abroad. The *British Medical Journal*, the *London Lancet*, the *Medical Press*, and several of our large dailies have denounced the whole scheme as the boldest quackery that has appeared for a long time. In the meantime, a house has been opened in London for the cure of inebriates, and the secret remedy offered for sale. An analysis of the remedy has been made, and found to contain no gold, but 27½ per cent. of absolute alcohol; and this statement is not denied by the managers of the cure. The Berlin authorities refused to permit a branch institute to be opened in Prussia, unless the remedy was first submitted to the public chemist for analysis. In all this the gold cure managers have displayed stupidity rarely seen among the common quacks. No attempts have been made to cover up the real pecuniary objects of enlisting capital and organizing companies for the sale of rights and remedies, as a matter of great profit. This combination of charity, business and science is new to our English relatives, and of course rejected. There is one feature of this gold cure specific worthy of study, that is the hurry and dash of the movement. Doing its work in three or four weeks, sending out the patient inflated with an idea of permanent cure, filled with extravagant expectancies and hope, and receiving full pay for this operation. This shows rare skill and full recognition of the brevity of this movement. The bichloride of gold will soon be among the things of the past; and also be a source of wonderment how it could grow and attract attention in this materialistic age.

THE SURGEONS AT HOMESTEAD.

In the report of the punishment of PRIVATE IAMS, at Homestead, as it appeared in *the daily press*, it seems that the colonel ordered him triced up by the thumbs, and the surgeons to stand by and see that no harm befell him.

In executing this order the surgeons took turns at standing on a chair, and counting the pulse of the man, and when it reached 120 ordered him to be cut down.

It is not the province of this JOURNAL to discuss the action of the colonel in ordering the punishment which he did. Whether he exceeded his powers or not, is the duty and privilege of others to determine. But the action of the surgeons becomes a fit subject for discussion by the medical profession. It is generally admitted that medicine is the healing art, and that the great duty of the physician is to relieve pain, and not to inflict it, except it be for the purpose of saving life or cutting short other suffering.

Nowhere can it be claimed that it is ever within the scope of their professional duties to be a party to brutality. Military medical officers are appointed as professional men, for the purpose of exercising their profession, and in the exercise of that profession they are not subject to the orders of the line officers. What medical man would carry out a line of treatment in a given case because ordered to do so by his superior officer in the line? If the colonel had ordered these medical men to cut off the leg of PRIVATE IAMS, no doubt they would have refused, because it would have encroached upon their medical functions. By what process of reasoning these surgeons determined that the colonel's orders had been complied with when the unfortunate man's pulse reached 120, it is hard to see. Why did they not order him down when his pulse reached 100? Or when it began to rise above normal? Or better yet, why did they not let the colonel himself decide when the punishment was complete, and then step in to extend relief so far as they could?

Suppose they had blundered, and let the man hang up so long as to end his life, who would have been guilty of the murder, they or the colonel? We care not what military law may be, it was the duty of these surgeons as medical men to refuse to carry out the orders of the colonel. to tender their resignations on the spot if necessary, or even to suffer punishment for insubordination.

In their action, if it be correctly reported, the profession has been outraged.

FARM COLONY FOR EPILEPTICS.

After a defeat in 1891, a salutary enactment was secured in 1892, in the New York legislature on behalf of the epileptic poor of that State. The text of the act is as follows:

SECTION 1. The Commissioners of the State Board of Charities are hereby directed to select a suitable site in the State of New York, on which to establish an institution on the colony plan for the medical treatment, care, education and employment of epileptics.

SECTION 2. The said Commissioners of the State Board of Charities shall have power to receive by gift or to contract for the purchase of such site for the location of buildings of said institution, subject however, to the approval of the next Legislature, to whom they shall report their action in the premises within ten days after the commencement of the session, together with plans and estimates for constructing buildings suitable for the purpose named in section one of this act; such site to include not less than three hundred acres, and such plans to provide for the accommdation of six hundred inmates and to admit such further extension of the buildings as may be necessary to meet future requirements of the State in providing for the epileptics.

Section 3. The said Commissioners shall be entitled to the payment of their traveling expenses while engaged in the performance of their duties under this act, and their account for such expenses shall be audited and paid out of the treasury, but they shall receive no compensation for their services. And the sum of one thousand five hundred dollars or so much thereof as may be necessary is hereby appropriated out of any moneys in the treasury not otherwise appropriated, payable on the warrant of the Comptroller, for the purposes of this act.

This act shall take effect immediately.

This is merely the entering wedge which it is expected will open the way for the establishment of at least one epileptic colony. A large sum of money will be needed yearly to carry the work forward from the point where this bill leaves it. At the present time there are considerable numbers of persons in the various county poorhouses, of all ages, suffering from varying grades of the disease, and almost entirely overlooked in the onward movement of charity as applied to the deficient class of citizens. As a rule, they have been without any proper care or treatment, and without training or employment, but the time approaches when every civilized State will be shamed into making an intelligent provision for this unfortunate, neglected class of patients.

EDITORIAL NOTES.

Dr. Chas. Warrington Earle, formerly connected with the College of Physicians and Surgeons, has been called to the chair of Obstetrics and Diseases of Children in Rush Medical College, recently made vacant by the death of the late Professor Knox. Dr. A. C. Cotton, who has for many years been connected with Rush Medical College as an Adjunct Professor has been elected Clinical Professor of Diseases of Children.

Pan-American Medical Congress.—On Thursday, July 15, Congress passed the Joint Resolution (Senate 76) as follows:

"*Resolved, etc.* That the President of the United States be and he is hereby authorized and requested to invite the several Governments of the Republics of Mexico, Central and South America, Haiti and Santo Domingo, and the Kingdom of Hawaii, to send official delegates to the meeting of the Pan-American Medical Congress to be held in the City of Washington, September 5, 6, 7 and 8, A. D. 1893."

University of Vermont Medical Department.—Important changes in the curriculum of the college at Burlington have been ordained. The length of the regular term has been ordered to be six months instead of four. It will begin in the last week in January. The preliminary course will not be resumed for the present; the lecturers who formerly participated in the preliminary term work will be given places in the regular corps, as vacancies arise. The special courses lately given to private classes will in large measure be made compulsory and become a part of the regular curriculum. Dr. W. B. Towles, of the University of Virginia, will continue to occupy the chair of anatomy, but the greater part of the practical instructions in this course will devolve on Dr. H. C. Tinkham, of Burlington. A class of forty-five students was graduated at the last Commencement.

Fatal Wounds from Fencers' Foils. Two Physicians Lose their Lives.—The *Lancet*, July 2, recently made mention of the death of an Italian physician in consequence of an accident received while fencing. Dr. Enrico Tanfani, of Florence, was considered one of the most promising of the young medical professors of that city. While at the Fencing School, pitted against a formidable antagonist, the foil of the latter had its button broken off, and a fatal lunge was made before the defect was noticed. His death was mourned by all classes, especially by the faculties of the military and medical training schools. With both of these he had been connected in a teaching capacity. His death took place June 14. About one month later, a very similar fatality befel an American physician, namely, Dr. Charles C. Terry, of Fall River. He was in the habit of taking weekly lessons in fencing, and his teacher was the instrumentality by which the fatal accident was produced. Dr. Terry was struck in the eye by a foil from which the button had unobservedly been broken. The weapon pierced the right eye and penetrated the brain. The victim fell unconscious at once, and he continued thus for about three hours and then died. The deceased was in his fifty-sixth year, a graduate of the Medical Department of Harvard, and for about thirty years a well-known practitioner of Fall River.

Chloralamide as a Remedy for Seasickness.—The *British Medical Journal* has recently contained some letters from men like Graily Hewitt, Robert Barnes and Professor Charteris, regarding their professional experience as to attacks of sea-sickness. The last named writer has a letter in the *Journal* for June 18, asking medical attention to a solution containing thirty grains of chloralamide, and a like amount of potassium bromide, in an ounce of menstruum; this has thus far been used with advantage, by persons who have had to make short voyages, like trips across the Channel or from Fleetwood to Belfast. This combination is dubbed by the author "chlorobrom." The passenger is recommended to take a podophyllin pill for one or two nights before the date of sailing, and when on board to remain for a time before rough water is reached, in a horizontal position with eyes shut, and to take no food on short trips. Dr. Charteris has received a letter from a medical man, who made the trip from Leith to Hamburg, wherein the correspondent states that the chlorobrom solution enabled him to stave off his old enemy—sea-sickness—by going to his berth early and getting a sound sleep, through the influence of the drugs, almost before the vessel got out into rough water. He was not sea-sick after he awoke, and was able to go to the table every meal, although the boat pitched greatly. On his next trip he avoided taking the medicine and he was very sick. A trip from Glasgow to Shetland was rendered unusually free from nausea and retching by means of small doses of the chlorobrom. The tossing of the steamer was violent enough to wake him up at night several times, but he experienced a few minutes of pleasurable reposeful feeling, which the rolling of the steamer seemed rather to enhance, and then he fell asleep again. A lady on the same trip, who had a like treatment, remarked spontaneously that during her intervals of wakefulness, "she enjoyed the rolling of the steamer." When the trip was at an end the patients were exceptionally free from exhaustion and weariness; some of them, in fact, reported themselves as "feeling quite vigorous and refreshed." The dose of chloralamide may be stated for an adult to be from a half-drachm upward, not exceeding one hundred grains in twenty-four hours. Professor Charteris closes his letter by saying that he has no hesitation in commending the drug to all who contemplate and who dread short and rough sea-voyages. Of longer transatlantic excursions he has not yet received details that will justify any sanguine expression. The reports thus far obtained warrant him in affirming that—

"1. This solution is absolutely safe and harmless, and that it produces a refreshing sleep without any baneful after-effects.

"2. When judiciously administered it prevents, and in all cases alleviates sea-sickness." The effects of the drug may be expected to begin in from thirty to ninety minutes after dosage; and the duration of sleep thus induced will be from five to eight hours. The quality of sleep is said to be refreshing, natural and devoid of disagreeable sequels in nearly all cases.

Nickel Carbon-Oxide.—Ludwig Mond reports a remarkable compound of nickel discovered by him. When that metal is exposed to the action of carbonous oxide gas at ordinary temperature the metal is acted on and converted into a volatile compound; very unstable and explosive. On exposing a heated body to it there is a deposition of pure nickel. When injected into the circulation of an animal, the bodily temperature is lowered in a marked manner. Other singular properties are said to be possessed by this newly discovered substance, which is already in the hands of physiologists for purposes of confirming former and of making new observations.

How to Choose a Medical Specialty.—Dr. William Osler delivered an address, in May last, before the American Pædiatric Society, discoursing upon the growth of medical specialisms, during the present generation. He therein points out the advantages of a slow growth and a judicious differentiation, but he is also keenly alive to those disadvantages that must necessarily follow an insecure foundation. He believes in a wide field of study, and a goodly period of time spent in it, before the neophyte is admitted into the ranks of the specialists. The complexity of the human body, and the close correlation of all its finer parts with one another, invite the profession to the formation of specialties, and to form them with a high regard for our undivided economy. Dr. Osler quotes from Plato in this connection:

"Plato must have discussed this very question with his bright friends in the profession—Eryximachus, perhaps—or he could never have put the following words into the mouth of Socrates: 'I dare say that you may have heard eminent physicians say to a patient who comes to them with bad eyes, that they cannot cure his eyes by themselves, but that if his eyes are to be cured, his head must be treated; and then again they say that to think of curing the head alone, and not the rest of the body also, is the height of folly. And arguing in this way they apply their methods to the whole body, and try to treat and heal the whole and the part together. Did you ever observe that this is what they say?' This paragraph embodies the law and the gospel for specialists."

An undesirable result may always be expected when the attempt is made to manufacture a complex construction, with materials that are ill-seasoned, and in too short a space of time. The West Africans have an adage which is pertinent to those who rush so rapidly into the specialties. It says in effect: "An unfortunate spectacle is a blind man traveling on the wrong road, carrying a load of rotten nuts in a bag that is full of holes."

Dr. Osler considers that the incentives to the speedy adoption of a specialty may appear strong ones, and nevertheless be unworthy of acceptance. He says: "The more speedy success that ofttimes comes from the cultivation of a specialty invites young men to early adopt a partial line of work. How infrequently are we consulted by sucklings in our ranks as to the most likely branch in which to succeed; far more frequently are we addressed another way—a student with the brazen assurance that only ignorance can give, announces that he intends to be a gynæcologist or an oculist. No more dangerous members of our profession exist than those born in it, so to speak, as specialists. Without any broad foundation in physiology or pathology, and ignorant of the great processes of disease, no amount of technical skill can hide from the keen eyes of colleagues defects that too often require the arts of the charlatan to hide from the public."

Dr. Osler says to the young would-be specialist that a strong position depends upon a strong foundation, and he holds up the late Sir William Bowman, as the great modern exemplar in specialism, who was so preëminent in several departments that the identity of the physiologist is almost lost in the ophthalmologist.

PHILADELPHIA LETTER.

The most prominent subject of discussion, in all circles, but possessing special features of medical interest during the past week, has been the weather. Although as an ordinary topic of conversation, it has been declared to be "bad form," yet when the temperature gets up to par, or above, comment is justifiable, of course within the usual limits of polite language. Moreover, anything stronger than this would be useless, for if abjurgation of the weather or the weather bureau had the slightest influence upon mean temperature and general humidity, it can be taken for granted that the hot spell would have terminated in a much briefer time than it did. The five days preceding July 26, 1892, will be memorable over a large section of the eastern United States for sustained high temperature, remarkable magnetic disturbances, and thunder storms of almost cyclonic violence. Deaths from lightning were reported at a number of places. On the 23d there was a fine display of the aurora borealis. Cases of sunstroke and heat exhaustion during these few days occurred in our northern cities by hundreds, and scores of deaths were directly or indirectly caused by the heat. The morbific influence, as usual, was strikingly manifest in the greatly increased death-rate, especially among young children. On the 26th of July, the thermometer at the office of the United States Weather Bureau in this city, indicated 100.8° F. The only higher temperature previously recorded at this office was on September 7, 1881, when it went up to 101.5°. These are the highest figures for Philadelphia within fifty years. At the Pennsylvania Hospital the temperature was 102° on the 26th, ult. The number of deaths from all causes up to three o'clock that day (July 26) was 103, and from Saturday noon to Tuesday noon, 350, of which at least 75 were ascribed to the heat, to which might be added 6, which were reported during the next twenty-four hours and many others which remained under treatment. In spite of the fact that the thermometer was undoubtedly higher in this city than in New York or Chicago, the mortality was not correspondingly great for the reason that the laboring portion of the population live in greater comfort here, largely occupying their own houses, they are less crowded and have better ventilated sleeping rooms; not only have they private bath rooms at home, but also have access to public bathing and swimming pools established by the city authorities in the thickly settled portions of the city. Owing to the well supplied markets, the food of the laborer is of better quality and better prepared than in some communities, and there is probably less intemperance. If it be true, as stated, that uncomfortable homes and indigestion from badly cooked food, are the main influences in leading the laborer to alcoholic indulgence, the explanation is at hand for his better social condition here, where, moreover, with the aid of the building society he can buy his own house and start out in his career as a capitalist. All of which has an effect upon the health and vigor of the workman and consequently may appropriately appear in this correspondence; more especially since indulgence in alcohol and depressed vitality are acknowledged predisposing causes of insolation. The Pennsylvania Hospital, and in fact most of our city hospitals where the grounds around the buildings admit, have erected tents on the lawn under the trees for the treatment of victims of the heat, and these have, at times, during the past week, furnished scenes of activity which recalled a field hospital during the war after an engagement, only *minus* the blood. The treatment was mainly refrigerant, the object being to abstract heat as rapidly as possible. The patient, nude, with the exception of a towel across the loins, is rubbed with ice and with a large watering pot showered with ice water, at the same time rubbing the surface to keep up the circulation of the blood. When there is marked determination of blood to the head or internal organs dry cupping is resorted to, and hypodermic injections of small doses of strychnine or cocaine if there is weakness of the circulation. As soon as the temperature has fallen to normal, the patient is rubbed dry and covered with a blanket, and bromides or antipyretics administered according to circumstances. This plan of treatment has been used here for twenty years or more and gives very satisfactory results.

Reference has been just made to the free use of baths in this city; in fact complaint has been recently made that the supply is running low and the householders have been warned against waste of the precious fluid. Although we are now using over 140,000,000 gallons daily, a larger quantity per capita than any other large city, the supply ordinarily is largely in excess. At the rate that we are increasing the demand it is estimated that in less than ten years, we shall need 500,000,000 gallons daily. This city is using nearly as much water now as London, which is four times as large in population. The new Reaborough reservoir adds a capacity of 148 millions to the 869 millions, or a total storage of over 1,017 millions of gallons of water, for which the upper Schuylkill is an abundant supply for the present. To this may be added a variable amount taken principally by private individuals or institutions from deep artesian wells, and as an extra source to large manufacturing establishments in the northeastern part of the city, the Delaware affords a practically inexhaustible quantity. It is estimated, however, that at the present time there is a daily waste of 30 to 40 million gallons, owing largely to leaking attachments in houses, and to the lavish use in washing pavements, which has been forbidden during the present short supply. There will probably be a thorough examination made of the entire system and the general introduction of water meters into private houses is now under consideration.

A new departure has been taken by our city government with regard to sectarian medicine. Mayor Stuart has just signed a bill appointing a corps of homœopathists, consisting of one from each poor district of the city, 25 in all, to share, with the regular physicians previously appointed, the medical care of the city poor. If this act were accompanied by one defining the peculiar characteristics of the homœopathist and compelling him to confine himself to so-called homœopathic practice, some ultimate good might result, to scientific medicine. However much we may commiserate the sick poor who will ask for mica pains with medicine compounded *sec. art.* and receive silica 3x with doubtful milk sugar, we cannot help appreciating the refreshing coolness of the whole procedure just at this particular time. If it would only lead to a fair comparison between the results of treatment of patients by this body of sectarians and patients in similar circumstances having the immense advantage afforded by non-sectarian, scientific physicians, the test would be welcomed by the latter as an object lesson to the community. Some persons, however, are utterly inaccessible to argument or demonstration. Only a short time ago the daily papers reported a disturbance between a certain homœopathic children's hospital in this city and the physicians who did not confine themselves to so-called homœopathic remedies, and when the managers passed a rule that such peculiar remedies should only be used in this hospital, the medical staff resigned in a body rather than obey the law of the institution. Such is modern homœopathy!

To turn to a more profitable subject, it is worth noticing, that Dr. William Duffield Robinson, who for more than ten years has been physician to the Eastern Penitentiary has recently published the results of his analysis of the records of this institution for a period covering sixty years and over 15,000 cases. Taking the records as fairly indicative of the total amount of crime and representative as regards the convictions of criminals of a certain area of the country from which deductions may be justly drawn applicable to some vexed questions in penology, he proceeds to the following conclusions: With regard to the reformation of criminals, he first limits the word "reformed" to the sense of being "neither Christianized nor moralized but that the habit of crime doing has been stopped." He answers that in this sense of the word reformations are frequent. He claims that persons of 60 years of age are about eight times as trustworthy as others only 25 years of age. "Putting this in another way, of eight people who are criminals of the penitentiary grade, 20 to 25 years of age, when they shall have become 60 to 65 years old, seven will have reformed, and only one remain criminal." This has much encouragement in it for philanthropists engaged in this work. His results give little support to the "hardened criminal" idea. It is the young man whose turbulent passions have not been disciplined by experience and punishment, who is the readiest to commit crime. There are, it is true, certain special offenses, to which those more advanced in life seem peculiarly addicted, but their number is small. He finds homicide, forgery, horse stealing and counterfeiting, all showing during the last decade a marked decline. Even robbery and burglary show a falling off and larceny is decreasing in frequency. On the contrary, embezzlement is rapidly increasing and sensual offenses and crimes of personal violence are of more frequent occurrence. Without making further extracts, the following statistics of relative proportion of crimes affords a striking summarization for serious consideration. "Of the total of 15,005 sentences to the Eastern Penitentiary during sixty years, there were for thefts and frauds, including larceny, false pretences, receiving stolen goods, forgery, counterfeiting, robbery, burglary, fraudulent written instruments and the like 77.19 per cent.

"For all personal assaults, including assault and battery in its different forms, mayhem, manslaughter, poisoning and murder, 12.66 per cent.

"For all malicious crimes, including malicious mischief, arson and perjury, 3.05 per cent.

"For all sensual crimes, 5.40 per cent.

"For all breaches of statute law, such as carrying concealed weapons, sending challenges, tramps, illegal voting, illicit *liquor selling and smuggling*,1.16 per cent.

" For felonies and misdemeanors unspecified,1.16 per cent. As showing what proportion of reconvictions occur, we find that the 15,005 sentences represented 12,895 individuals. Of these 9,248 have been convicted once, 2,248 twice, 748 three times,328 four times,148 five times,78 six times,39 seven times, 18,eight times. 20 nine times, 4 ten times, 4 eleven times, 2 twelve times, 3 fourteen times and 1 for each of the remaining numbers of times up to 22."

In the summary issued for the week ending at noon July 30, the total number of deaths in this city were 870, the largest number, it is said, ever reported for a corresponding period. It is estimated that nearly one-half, or over four hundred deaths, were attributable to the excessive heat. In the meteorological summary, issued by Mr. Day, the Local Forecast official, U. S. Weather Bureau, this statement is made with reference to the temperature: "The prominent feature of the month just closed, was the unprecedented 'hot spell,' from the 24th to the 29th inclusive, with maximum temperatures of 91, 93, 101, 96, 96, 98, and daily averages of 82, 84, 88, 87, 86 and 89 degrees." No rain of any amount, excepting on the 14th, fell at this station for twenty-five days, following the 3d of July. On the 30th and 31st, there were several thunder showers, with copious precipitation, thus relieving the threatened water famine. The total rainfall for the month was 2.97 inches; the average for 21 years for July being 4.54 inches, leaving a deficiency, therefore, of 1.56 inches. It may be mentioned as a matter of special interest that the official report contains the further statement that there were no days on which frost occurred during the month.

Dr. W. C. Hollopeter recently reported to the County Medical Society, two interesting cases of " mucous disease; chronic intestinal catarrh, with one autopsy." He expressed surprise that this condition has not received more attention. It should be separated from ordinary chronic intestinal catarrh in children, the literature of which is quite voluminous; the only author who distinctly outlines this particular form being Eustace Smith, who speaks of it as a sequel of whooping cough. Dr. Lewis Star also refers to it in " Diseases of the Digestive Organs in Childhood." The special symptomatic feature is the occurrence of, constipation for several days, followed by profuse mucous discharges containing bacteria and salts, and accompanied by general wasting and tumid, band-shaped abdomen. In the fatal case, the lesions were found limited to the intestines. "The lymph- nodules or solitary follicles of the whole of the colon and part of the small bowel, the ileum, were in an inflammatory condition,and in many there existed deep ulceration." This envolvement of the small bowel is quite rare and is found only when intestinal disease has a protracted cause. Follicular ulceration of the intestine is itself an unusual occurrence and more especially so, when found in the small bowel. The ileum in the case reported had a worm eaten appearance owing to the numerous enlarged and ulcerated nodules. Usually the ulcers were not above 1-6 to 1-4 of an inch except where several had coalesced, they extended through the mucosa in the sub-mucous tissue. The reporter in conclusion called attention to the fact that this disease is separated from ordinary catarrhal inflammation by its clinical course and pathological appearances. The discharges are usually alkaline. The disorder is not necessarily a sequel of whooping cough or a consequence of second dentition, but may occur after any depressing disorder. It is not necessarily incurable. As might be anticipated the strictest attention to diet is required in its treatment conjoined to measures calculated to build up the nutrition of the little patient.

The following real incident carries a moral for those who have the penetration to perceive it. Your correspondent happened to meet socially a gentleman who was subsequently ascertained to be connected in a reportorial capacity with one of our large daily journals. A certain prominent doctor's name was mentioned and the reporter innocently remarked " Oh yes, I know Professor Blank very well. *He* is a great friend of our paper, and whenever he had an interesting surgical operation he used to send us an account for publication." It used to be a matter of conjecture how the papers succeeded in getting reports of operations, but it is now clear that the evidence of enterprise is not all in favor of the daily press.

New York Board of Health; Its Sanitary Superintendent and the Late Advisory Board.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

My Dear Sir:—In recent editorials and communications in various medical journals, in relation to certain changes in the New York Board of Health, *it is said that* Drs. Janeway, Jacobi, Prudden and Stephen Smith have resigned their honorary positions on that Board, on the ground that faithful medical employés have been brutally treated at the hands of pot-house politicians, and ordered to hand in their resignations; in other words, that reputable and competent men have been put out of office, without complaint or pretence of charges "for cause." . . . . Dr. Ewing, who has for *twenty* years, been Sanitary Superintendent, was forced out, of the important position, by President Wilson, it is alleged, in order that a politician or a person demanded by a *political organization, might be put in his* place.

They very candidly admit that the above is based on hearsay knowledge. As a matter of right and justice it is well that they do; for with one solitary exception, this whole statement is a malicious invention, without a word of truth in it, from beginning to end.

Drs. Janeway, Prudden, *Jacobi*, and Stephen Smith, *did resign. Drs. Janeway and Smith have both "feathered their* nests" as high officials in this same Board of Health, on high salaries, and with little to do, within the *thirty years*, during which time, it is alleged, "it has not been altogether free from the slime of the political serpent." (Ibid.)

It seems harsh to assume that they resigned, "because, faithful medical employees were brutally entreated to send in their resignations," for this is false. What they resigned for, is their own concern. There were no physicians ordered *to resign* by anyone. *One*, and only *one* was requested *to* hand in his resignation. This was Dr. Ewing, who was *paid* out of the city treasury, *$4,800.00* a year. *He* succeeded *Dr.* Walter F.Day, *four* years ago,not *twenty*,as alleged; and,while trying to fulfil his public duties, carried on an extensive, private practice. His predecessor was not known as a practitioner.

He was requested to surrender his office, not on any "*pretense*," but on an open complaint and charge, *that he did not* visit the Pest-house *on North Brother's* Island.

Dr. Ewing was succeeded,by a gentleman utterly unknown in local politics, who commenced at the "bottom round of the ladder" nine years ago, in the Board of Health, and has by the dint of persevering effort, raised himself to the position which he now occupies, though, with nearly a thousand a year, less than the gentleman whom he succeeds was paid. Who does not know of *Dr. Cyrus* Edson, the present Sanitary Superintendent, as an indefatigable and progressive writer in everything pertaining to sanitary science?

So much for this "tempest in a teapot." In this connection it may be well to have it more generally known, that in this whole country there is no city, in which politics interferes less in sanitary matters, than in New York. *If there* is anyone who can cite a *single* instance in which a member of the medical staff has been removed *on purely* political grounds let him speak out, and I am sure it will be news to New York physicians. Yours respectfully,

TRUTH AND FAIRPLAY.

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ORIGINAL ARTICLES.

ACUTE INTESTINAL OBSTRUCTION AND THE USE OF SALINE CATHARTICS FOR DIAGNOSTIC PURPOSES.

Read by Title in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, June, 1892.

BY HENRY H. MUDD, M.D.,
OF ST. LOUIS, MO.

The diagnosis of a chronic intestinal obstruction can usually be determined by its clinical history and its symptoms with sufficient clearness, and in time for definite action. Acute intestinal obstruction is often sudden in its onset and obscure in its symptoms. Destructive local changes occur in a few hours, and grave constitutional complications develop with surprising rapidity.

A severe colic or an acute peritonitis may produce symptoms which strongly suggest intestinal obstruction. The three cardinal symptoms of obstruction of the bowels, nausea, pain and constipation, are present in each one of these three distinct diseases. The three conditions require widely different treatment. The pain and collapse of a severe colic, an obstruction, or of peritonitis, demands immediate relief, and we promptly and unhesitatingly resort to opium for its control. Opium arrests pain, allays vomiting and delays impending collapse. It so mitigates every symptom of colic, peritonitis or obstruction, that the differential diagnosis becomes obscured, and a doubt which paralyzes action is engendered in the mind of the physician.

Every practitioner has witnessed the disastrous effect of the delay that is imposed by this uncertainty. Many of the cases of obstruction, with stomach emptied of its contents, and relieved of pain by the prompt administration of opium, remain quiescent for many hours. The flaccid abdomen, the soft regular pulse, the normal temperature and the absence of tenderness and pain, allay anxiety. The anorexia and indisposition to move about the bed do not determine the condition. Meteorism may be present, but neither its presence nor its absence determine the solution of the problem.

This condition of doubt may exist until very serious local changes have occurred in the strangulated loop, and with but little evidence of change in the general condition, until the final collapse develops suddenly on the fifth or sixth day of the sickness.

It is a clinical fact, too often overlooked, that a very tight constriction of the bowel, one that promptly causes gangrene of the strangulated loop, gives but very little local evidence of its presence. It does not so quickly cause a local peritonitis as does that strangulation which, while preventing fecal movement, only impairs the free circulation of blood, thus promoting engorgement and inflammation, with its attendant pain and tenderness.

The text-books have taught, and the profession has insisted, that a purgative in intestinal obstruction was an unmitigated evil. Indeed, so strong is this feeling that it is almost regarded as criminal to use it where obstruction is suspected. Yet the use of enemas in supposed intestinal obstruction is a very common practice. Enemata are above everything the remedy for the obstruction of a fecal accumulation, but this condition is not usually difficult of diagnosis and is not now under consideration. What do the large fluid injections accomplish in a case of obstruction from other causes? The enema may bring away more or less of the contents of the lower bowel. It arouses a peristalsis unpleasant to the patient and inefficient in its purpose. The enemas hasten the destructive changes at the point of strangulation, and they do not make clear the diagnosis. Its repeated use hastens the final collapse even as a purgative does. Yet the patient submits to and the physician persists in its repeated and continuous use. It is not efficient above the colon except by peristalsis. The danger of a purgative lies in the peristaltic action which it excites. Without it, the patient will frequently, under opium, remain several days with but little peristalsis, though the destructive changes are silently advancing at the point of obstruction. The decomposition going on in the contents of the intestinal canal is rendering the fluid offensive; the sensitiveness of the intestine above the obstruction is increasing, and grave vaso-motor changes are undermining the resisting powers of the individual. When peristalsis is finally aroused by nature's forces in spite of opium, and just as the diagnosis becomes clear, the patient succumbs, and dies in spite of operative interference, which is then urgently demanded by the patient and the attending physician.

How can we solve the doubt and make a positive diagnosis in time to act efficiently and save the patient? This is the problem. I believe the much abused purgative will help us in the early diagnosis, if used properly and at the right time. I think we may assume that:

First: There is legitimate reason for the most skilled diagnostician to be in doubt in some cases of intestinal obstruction.

Second: The differential diagnosis rests ordinarily between colic, peritonitis and obstruction.

Third: Laparotomy is accepted as the most reliable therapeutic measure for the relief of intestinal obstruction.

Fourth: Laparotomy, to be a good therapeutic agent, must be performed early in the existence of the obstruction.

Pain, vomiting and constipation are the three cardinal symptoms of obstruction; yet these conditions are present in constipation, in intestinal colic, and in many diverse conditions.

What are the effects of a saline cathartic on the three conditions above mentioned, viz.: colic, peritonitis and intestinal obstruction?

Colic: It will purge a case of colic, and a sedative then cures it.

Peritonitis: It may arrest a peritonitis.

Obstruction: It will develop and make plain the more serious condition of a mechanical obstruction. If given early in the case, the distress and aggravation of the symptoms which it arouses will subside under the use of morphine, and the general condition will then permit operative relief.

It is only where the doubt is sufficiently strong to control action that the saline purgative is used. It should be promptly given. The time for its efficient administration is in the lull or quiet induced by the first dose of morphine. It may again arouse ineffective and painful peristalsis, but it will in many cases resolve doubt and determine surgical interference when it is still possible to save the patient.

If the diagnosis of obstruction is clear, there is no excuse for a purgative. No one would attempt to relieve an intussusception, a hernia, a volvulus or a stricture by a purgative. They aggravate and make more urgent every symptom which attends the condition. Yet this is a good reason to administer a saline cathartic in the beginning of many doubtful cases as a diagnostic measure.

A purgative in intestinal obstruction is an unmitigated evil in its effects upon the strangulated loop and the patient. It should not be given unless it is for the benefit of the surgeon and to purge our minds of doubt. But it seems to me that the great uniformity with which cases recover from the primary depression and collapse which so frequently announces the onset of intestinal obstruction, indicates to us the possibility of using *a purgative* as a diagnostic agent rather than an exploratory laparotomy in the earlier hours of the disease. If the peristalsis which inevitably sooner or later declares itself, and convinces the most skeptical patient and the most obtuse physician that the obstruction is pronounced and absolute, is promptly aroused by a saline cathartic given before the destructive changes have occurred, and before the vitality of the patient has been exhausted, the action thus aroused will again subside under the use of opium (morphine), and the depression which is occasioned by its use will disappear, leaving an open field for the surgeon.

Laparotomy has rapidly grown in favor as the most reliable therapeutic measure for the relief of intestinal obstruction, if resorted to early in its existence. Surgeons sometimes conceal their ignorance by "explorative laparotomy." Exploratory laparotomy, where symptoms of intestinal obstruction are present, may lead to the prompt recognition of the condition and its cure; but it is a dangerous proceeding where meteorism is present, circulation feeble and inflammation already existent. These conditions may exist without mechanical obstruction and without the existence of a condition amenable to operative measures. I believe we can avoid some of these useless operations, and save many patients, by promptly resorting to the less dangerous saline cathartic. It will be admitted when laparotomy would not be considered. It will eliminate doubt, and enable the physician and surgeon to intelligently urge a prompt resort to the efficient treatment necessary to relieve an obstruction, viz.: laparotomy.

If it has been determined to perform laparotomy the cathartic is of course not to be considered. If however, there is a case anxiously and carefully considered for twenty-four hours (an arbitrary but no a standard time), and grave doubt is still presen concerning the condition, an efficient saline catharti (Epsom salts), followed by an enema, may solve the doubt. It should be remembered that the saline cathartics are dependent upon a fair amount of fluids in the body for their efficient action, and if they are given after a patient has been for a number of days without imbibing fluids, they will not act. The paralysis which attends intestinal inflammation will also interfere with their action.

Will you, in a doubtful case, if presented within forty-eight hours of the onset of the trouble, wait and let time resolve the doubt and destroy your patient, or make an exploratory laparotomy on a patient who does not need it? It appears to me that a purgative is the third and safest method of solving the doubt.

The free, spontaneous action which follows relief from an obstruction, whether by nature's unaided effort or by surgical interference, not infrequently produces such a collapse that death follows. Death may be precipitated by cathartics if used when obstruction has existed for any length of time, but it cannot be said that they cause it, for the obstruction surely determines conditions which finally excite the peristalsis, collapse and death, and the longer the peristaltic action is delayed the more dangerous it is.

Intestinal obstruction may exist for days without developing any more positive signs of its presence than we frequently see in obstinate constipation with its attendant pain, sick stomach, meteorism and prostration. It is for these doubtful cases that I urge as a conservative measure the administration of a saline cathartic. I am sure the modern physician will admit that there is legitimate reason for doubt in the diagnosis of at least a small percentage of cases of intestinal obstruction in the early stages of their development.

ON THE TREATMENT OF INJURIES OF THE ABDOMEN NOT REQUIRING SURGICAL OPERATIONS.

Read in the Section of Surgery and Anatomy, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY J. SCHNECK, M.D.,
OF MT. CARMEL, ILL.

In practice the stubborn facts are daily demonstrated that the prognosis of wounds of the abdomen is very unfavorable, the diagnosis frequently obscure or recondite, and the results of treatment often unsatisfactory; especially so in the hands of the general practitioner. Hence, any account which gives the results of experience must be of interest to the profession, even if not of much value in itself. It is easy enough to theoretically draw the line between operable and non-operable cases in abdominal injuries, but in practice it is often the most difficult question to decide in the whole domain of surgery; especially where there are no external wounds or bruises to serve as guides.

The well established fact, accepted by surgical authorities of all ages, *that the peritoneum is especially prone to become inflamed when it is lacerated,* bruised or disturbed, or the ease with which an inflammation extends to it from neighboring organs, should never be lost sight of. If there is laceration r displacement of any of the important organs, it may be necessary, or the positive duty, to perform parotomy and adjust the rent or displacement at nce.

For purposes of study, injuries of the abdomen may be divided into four classes:

1. Injuries involving the parietes only, in which he integument remains unbroken.
2. Injuries in which the integument is unbroken, ut some of the internal viscera are involved in the njury.
3. Injuries in which there is a solution of continity involving the parietes only.
4. Injuries in which there is an open wound in the arietes and the internal viscera are also involved.

The last two of these classes may be dismissed at nce from consideration in this paper, as their treatment is by operative means from the beginning.

In injuries involving the parietes only, there may be extensive infiltration of the cellular tissues; the principal symptoms in such cases are pain, soreness, welling and ecchymosis, and a doughy, crackling ensation on palpation. In other cases there is an ccumulation of blood between the muscular layers; n these cases there will be more or less pain, soreness, and a swelling which will impart a spongy senation to the examining finger. In another class of ases there is rupture of some of the muscular fibres, when there will be severe pain and soreness to the ouch, which is greatly aggravated by motion, and, if he tear is extensive, an inability to stand erect, without support. The examining finger will detect a more or less abrupt indentation; or only a soft, non-resisting condition over the site of the injury.

Although these cases may appear simple, the prognosis should be guarded; the most serious consequences may follow an apparently slight injury. The treatment should be thorough and careful. Inflammation may extend to the peritoneum, this must be looked for and guarded against. Suppuration may follow with extensive burrowing of pus, when it will be necessary to make a free incision and wash out the pus cavity.

In extensive rupture of the muscular tissues recovery will be slow and may be followed by more or less permanent pain and weakness of the muscles, and finally a hernia. These ruptures are usually produced by sudden violent efforts, as in falls, lifting or gymnastic exercises, etc. The treatment of these cases is the same as that for the second class, which will be given further on.

We now come to the second class, or injuries in which the integument is unbroken, but some of the abdominal viscera are involved. Here the practitioner of surgery finds himself confronted by one of the most trying circumstances in the whole range of practice.

The abdominal cavity contains more viscera with dissimilar functions than any other cavity in the human body; hence, an injury to this part of the body will produce a great variety of symptoms. Before an intelligent line of treatment can be instituted it is necessary to decide, if possible, the exact nature and extent of the injury.

Probably one of the most common sources of danger in injuries of the abdomen is shock produced by bruising or otherwise injuring the abdominal nerve centers. The epigastric or solar plexus supplies all the viscera in the abdominal cavity. It receives all the fibres of the great splanchnic nerve, part of those of the lesser splanchnic nerves; also the terminal branches of the right pneumogastric nerve. The semi-lunar ganglia are part of the solar plexus; they receive the great splanchnic nerve, the origin of which is from the lower thoracic ganglia. Each of the thoracic ganglia is connected to the nearest anterior root of the spinal nerve; and the skin of the epigastrium is supplied by these very same spinal nerves, viz., from the fourth to the seventh intercostal nerves. There is therefore a complete nervous circuit from the mucous membrane of the stomach and intestines to the skin of the epigastrium.

Having thus in mind the innervation of the abdomen, we can more rationally explain the cause of the serious symptoms which follow an apparently trivial injury of this part of the body.

When called to treat a patient who has received an injury of the abdomen, it is necessary to discover if possible, the nature and extent of the damage done. Is there only contusion of the parietes and viscera or are some of the internal organs ruptured or dislocated, and if there is an organic lesion, is it of such a nature as to require an operation? There may be rupture of the diaphragm, stomach, intestines, liver, bile duct, spleen, pancreas, supra-renal capsule, kidneys, ureter or the bladder. Or these several organs may be more or less bruised or displaced. While there are few, if any, pathognomonic signs for any of these lesions, yet the most of them may be detected or very strongly suspected if all the symptoms in any given case are carefully investigated.

There may be serious nerve disturbance from simple contusions of the abdominal parietes, but usually when there is profound shock following an injury in this region, it is tolerably safe to conclude that there is more or less damage done to the viscera, not necessarily of the nature of an organic lesion, however. When there is excessive pain, rapid weak pulse, great restlessness and anxiety, persistent vomiting, catchy, spasmodic respiration, with a feeling on the part of the patient that he is dying, or if there is delirium, or unconsciousness, one may safely suspect that some of the internal viscera are seriously damaged. While collapse is a common occurrence after abdominal injuries, yet cases in which there was so serious an injury as rupture of the liver or intestines have been known to happen without being immediately followed by this symptom. When shock is of short duration there is a reasonable probability that there is no serious internal injury. In collapse from nervous shock following an injury of the abdomen, in which there is little hæmorrhage, the skin is usually cyanosed, cold and clammy; while in serious internal hæmorrhage the skin is pale, cold and with less moisture.

Persistent vomiting is an indication of severe shock or serious disturbance of some of the internal organs; when blood is vomited the injury is probably of the stomach. Pain is often an uncertain diagnostic guide, while localized tenderness is usually of great value. Experience shows that injuries received above the umbilicus are more frequently serious or fatal than in those where the injury is below that point. This is due to the fact that more of the important organs are located above that point than below it. In the act of respiration there is also more disturbance of the parts in the upper portion of the abdomen. Valuable information may often be obtained by a close inquiry as to how and by what the injury was done; and the position and condition of the patient; if a heavy wheel or roller has passed over the body, or if the body has been caught between two heavy moving bodies, there is a greater probability of rupture of some of the internal organs or blood vessels than if he was struck while standing free; or had fallen against an object.

The shape of the impinging body will often serve as a help in deciding the amount and kind of injury done. The thickness of the abdominal walls should also be taken into the account; if they are thick and fleshy they will offer a considerable protection to the internal viscera. Shortly after a meal when the stomach is full it is more readily ruptured than when empty. So with the bladder, it is more readily ruptured when it is full; in this condition it also rises higher in the pelvis and is thus more exposed. The following are the principal symptoms usually found when the several organs are severely injured. In rupture of the diaphragm the most prominent symptom is an unsatiable thirst. In the case of a large man who fell from a train while it was passing over a high trestle there was constant craving for water, quick superficial respiration. He died on the third day; there was a rent 2½ inches long in the diaphragm on the left side, the peritoneum congested and the right thigh was fractured. I have been unable to find reports of instances in which the diaphragm was sewed up after such injury. Spontaneous unions are not rare but are usually followed by phrenic herniæ. In rupture of the stomach there is usually profound shock, vomiting of blood and a constant, severe, radiating pain from the seat of injury; recovery has taken place, without an operation when the rent was small. In laceration of the intestines there is meteorism, pain of abdomen and great tenderness; the muscles are rigid and unyielding to the touch; breathing is short and thoracic; countenance expressive of distress and anxiety; vomiting early and severe; thirst and profound shock; unless the rent is small death will follow, laparotomy is usually the only hope.

Rupture of the liver is usually followed by jaundice and itching of the skin; white stools and saccharine diabetes: pain and tenderness over the region of the liver. Patients have recovered from extensive injuries of this organ without operative treatment. When the bile-duct is ruptured there is usually severe pain in the hypo-gastric region, great anxiety and restlessness followed by collapse; this usually terminates fatally. The principal symptom in rupture of the spleen is rapid and profound collapse, produced by the violent hæmorrhage which usually accompanies this injury; the pain is located in the left hypochondriac region. Recoveries have taken place, after rupture of this organ, without surgical aid.

There are no symptoms recorded in injuries of the pancreas which would be of any diagnostic value. There is not much hæmorrhage, and severe injuries are not necessarily fatal. The peritoneum is thin and readily ruptured when put on the stretch; in such cases there is great tenderness over the whole abdomen, pulse very rapid and small, excessive tympanitis; the lower limbs are drawn up, and the upper portion of the body bent forward.

In rupture of a kidney there is vomiting, some collapse, pain along the course of the ureter and in the lumbar region; retracted testicle and pain along the spermatic cord; a constant desire to urinate, but often an inability to do so; the urine is usually bloody and scanty. In a railroad injury in which the right kidney was ruptured and the right foot mangled, there was, throughout the four days the patient lived, numbness of both thighs. Rupture of the kidneys is not necessarily fatal, especially if the injury is on its posterior surface. Opium should be given cautiously in injuries of these organs.

When a ureter is torn there is not usually any very serious symptoms immediately following; but in the course of a few weeks a large tumor will develop on the affected side; this when tapped will prove to be caused by an accumulation of urine, blood and probably pus.

When the bladder has been ruptured there will be a constant desire to urinate; the urine is usually scanty and bloody; pain about the pelvis excessive; patient is unable to stand or walk.

Out of 200 cases tabulated by Rivington but 8 recovered. Operative measures appear to offer the best hope of success.

In rupture of a large blood vessel collapse does not usually follow immediately on receipt of the injury; the patient often being able to walk some distance before exhaustion is produced from the excessive hæmorrhage. In internal hæmorrhage collapse is often a means of temporarily checking the hæmorrhage.

The surgeon usually finds the patient in a state of cardiac depression and shock with nausea, vomiting, pain, restlessness, cold extremities, shrunken condition of the skin and clammy perspiration. The abdominal muscles are in a state of tonic contraction. It is important to note that this inhibiting condition extends frequently to the muscular coats of the intestines and sometimes to the urethra and ureters; for in many cases there is suppression of urine and obstinate constipation of the bowels. This condition may continue from a few hours to several days. If the patient survives this condition or is relieved by artificial means then there follows a stage of reaction and probably inflammation. If the inhibited condition is not relieved the patient usually dies in this stage of shock. So that the first important object to be accomplished is to restore the innervation to its normal condition. This is best accomplished by external and internal warmth. Stimulants by the stomach frequently are of no avail, from the fact that they are not assimilated; in such instances they are best given hypodermatically. Brandy, nux vomica and digitalis are usually the most available and may be administered either way. Draughts of hot water are also of much value, even if vomited. Hot applications, to the extremities, of mustard draughts or flannel cloths wrung out of a strong solution of capsicum are valuable restoratives. As stated in the foregoing pages, in many of these cases there is a firmly contracted condition of the muscular coats of the bowels causing obstinate obstruction. It is surprising in how short a time the contents of the intestines will become hard and dry after an injury to this region. In many cases the state of collapse will not yield until this source of irritation is relieved. I hope to illustrate by the following cases how rapidly such cases will recover from shock after the bowels have been cleared of their hardened contents by hot water injections. The hot water serves a two fold purpose; it clears away the hardened and dried feces and thus removes a future source of irritation and infection; the hot water also is a direct stimulant to the nerve endings in the intestines. The injection should be used as soon as possible after the receipt of the injury. The rationale of this treatment will be readily understood if we call to mind the position of the solar plexus with its numerous satellite plexuses. To illustrate the results of this method of treatment I will report briefly three cases; selected so as to show the different methods of injury by which such cases occur.

In August, 1883, I was called to see R. W., a farmer, who had been struck by one limb of an A-shaped harrow, which he was trying to lift over a stump while the horses were dragging it over the ground; the principal injury being received between the crest of the ilium and the lower ribs, on the left side, and extending across the abdomen. I saw him twenty hours after the injury had been received. His face was pale and the features pinched; the whole surface and extremities cold and clammy; pulse barely perceptible at the wrist; abdominal walls were hard and contracted, but slightly distended. He was very restless, writhing and twisting over the bed, and complaining of severe pain in the abdomen. He had not had a discharge from his bowels or bladder since he had received the injury. After administering some palliative remedies, I introduced a catheter and drew off several pints of bloody urine. The pain and restlessness still continued. He was then given a large injection of hot water, which brought away a large quantity of dry, hard nodules of feces. This was repeated several times with like effects. He gradually rallied from the collapsed condition and made a good recovery. Within a year chronic Bright's disease developed, from which he finally died.

In September, 1884, I saw in consultation M. W., a carpenter. Thirty hours before, he had received an injury of the abdomen by making a misstep while walking on an uncovered joist in the second floor of a building; the principal force of the blow taking effect over the region of the umbilicus. I found him in an advanced stage of collapse, in spite of stimulants and external warmth, which had been freely employed. The abdominal walls were very hard and retracted. He had not had an evacuation of the bowels since the injury had been received; the kidneys had acted freely. I advised enemas of hot water, which resulted finally in free evacuations of dry, hard stools. He shortly afterwards rallied, and finally recovered.

In November, 1883, I was called to see F. F., a brakeman, who twelve hours before had been caught between the tender of an engine and a freight car He had sustained a severe squeeze; the principal force being exerted over the abdominal region below the umbilicus. When I first saw him he was not suffering from localized pain, but was very restless; temperature normal; abdomen not swollen, but the walls were hard and rigid. He had not urinated nor had an evacuation of the bowels since the injury. Pulse was not seriously depressed. I drew off the urine with a catheter and administered a saline cathartic, and gave him anodyne remedies. But the restlessness continued and finally developed into unconscious delirium, so severe that it required two men to hold him on the bed. Several doses of the cathartic remedy failed to produce the desired effect, so an enema was ordered. Diligent efforts by this method brought away several large evacuations of hard, lumpy stools, after which consciousness was restored, the restlessness subsided and the rigid condition of the abdomen gave way. For nearly one week the urine had to be drawn off with the catheter. The abdomen became tender and tympanitic from localized inflammation of some of the abdominal organs. At the end of ten days the symptoms subsided, and the patient finally made a good recovery.

The patient having been restored from the shock and collapse, our next duty is to combat inflammation and support the system. Rest is of first importance, and should be continued until all traces of inflammation have been subdued. Many patients have been lost by a neglect of this simple precaution. The following case will serve as a striking illustration of this point:

In September, 1887, I was called in consultation to see R. W., a carpenter, who had fallen on to the flange of a car wheel, while he was carrying a heavy load, striking himself on the right lower quarter of the abdomen with considerable force. He continued to work that day and the next, but felt considerable soreness and pain over the seat of injury. The second and third days he suffered still more severely, so that he did not attempt to work, but was up and about most of the time. On the fourth day the pain was so severe that he was confined to bed; on the fifth day, being still worse, he called in a physician, who found him with a slight fever, abdomen distended and very tender, pulse quick and thready. In spite of careful treatment these symptoms grew more severe until the eleventh day, when I first saw him. He was then in a state of collapse, and died several hours later. A post-mortem examination was made the next day. The major portion of the peritoneum and intestines showed evidences of inflammation, and in the lower and right portion of the abdomen they were extensively gangrenous.

I regard this as a very instructive case. There is good reason for believing that had this man taken rest, and some proper treatment, during the first days after the injury, he would not have developed any serious symptoms. This case also illustrates another important fact: that a severe localized inflammation may run to a fatal termination without the fever ever reaching a high point. The fever in this case never reached above 102°. Is it not probable that the injury to the nerve ganglia, in these cases, is so great that the system virtually never recovers its natural tonicity?

In combating inflammation, it is important to keep the patient cool and quiet; the dorsal position is the best, with the head and shoulders elevated and the lower limbs flexed, so as to relax the abdominal muscles. Next in importance, and to aid in keeping the patient quiet, is opium; it should be pushed until pain is relieved and quiet restored. With the opium give $\frac{1}{10}$ gr. doses of calomel from the beginning; it will keep the portal circulation, which collects the venous blood from the viscera of digestion, active, and thus relieve congestion of the stomach and intestinal canal, and its accompanying glands. Instead of calomel, small doses of sulphate of magnesia may be given, but not to catharsis. When the fever is very high with a full, sustained pulse, aconite in small and frequently repeated doses should be given during the first few days. Locally, leeches may be applied over the point of greatest tenderness and extravasation. Fomentations of flannel sacks filled with hops, steamed until they are hot and damp, then applied constantly over the whole abdominal surface, will relieve pain and soreness, and serve as a restorative. If the warm applications are ungrateful to the patient, poultices made of ice and linseed meal may be used; but usually the former is the best.

The diet should be spare, liquid, easily digested and given cool. Milk is usually the best; blanc mange, custard, lemon sherbet, ice-cream and gelatine are all good. It is important to keep the bladder well emptied, and if necessary use the catheter every four to six hours. In nearly all cases of injury of the abdomen the urine will contain pus in the course of a few days; this should be detected by microscopic examinations of the urine, and when present, I know of no remedy so beneficial as salicylic acid, given about every four hours in 5 gr. doses. Throughout the treatment the surgeon should be very guarded in his prognosis, and exceedingly careful and thorough in his treatment. Every injury should be treated as if it were serious from the beginning to the end.

Dr. Mordecai Price, of Philadelphia, being absent, his paper on "Emergency Work in Abdominal Surgery" was read by title, and Dr. John L. Link, of Terre Haute, Ind., occupied the time allotted to the paper in a discussion on emergency work. He said a wound should be probed as far as the probe will go, and the knife should follow as far as the probe went. Physicians should be held strictly responsible for not operating in cases of injury to the abdomen. Even if he takes an ordinary needle and thread and sews up the wound, it is better than to leave it alone. He reported a case of operation on a dog in which he put in stitches of ordinary cotton, and the dog recovered. The coarse thread sets up an inflammation which causes the neighboring parts to adhere and close the wound.

Dr. Halley, of Missouri, wanted to know if he did nothing to render the thread antiseptic, and received a reply in the negative.

Dr. Quimby, of New Jersey, thought that by following the wound made by a sharp, narrow instrument, with the knife, the operation would be worse than the original wound.

Dr. Senn, of Chicago, was of the opinion that operations should be thoroughly done or not at all. To illustrate his point he reported a case in which a young man was shot through the abdomen. Two very respectable physicians were called, and they, having heard of the new treatment in cases of this kind, viz.: to follow the track of the bullet, opened the abdomen, inspected the intestinal coils and adjacent viscera, and finding no injury to them, closed the wound. The patient, who never rallied from the operation, died in twenty-four hours, and the autopsy revealed more than one perforation. He believed this kind of teaching to be exceedingly injurious to our profession, and only when we can satisfy ourselves that the injury will necessarily prove fatal, should we add the additional risk of operation.

Dr. Halley, of Missouri, said that every one who operates to-day must do so with careful aseptic and antiseptic precautions, therefore every surgeon who does an operation without these safeguards is little better than a murderer. Many a perforation of the intestinal canal will recover if left alone.

Dr. Link said he believed in all the preparation spoken of, but also believed that more cases would recover with operation than without.

The paper on "The Present State of the Surgery of the Vermiform Appendix," by Dr. J. A. Wyeth, of New York, was read by title. Dr. Milligan, of New York, occupied the time in reporting a case of undescended testes associated with hernia operated on by Baccini's method. His remarks were illustrated by diagrams.

HERNIÆ, OPERATIVE AND NON-OPERATIVE.

Read in the Section of Surgery and Anatomy, at the Forty third Annual Meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

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As hernial protrusions through the lower abdomen are a very common infirmity in the civilized human being; and as they are always a source of inconvenience and discomfort, besides being an occasional danger to life, surgeons have, since the earliest times, actively occupied themselves, with a most commendable zeal, in divers expedients to effect a radical cure of them, or to place them in such a position as will conduce to the greatest comfort. Every sort of mechanical expedient has been resorted to for their cure, by traveling charlatans and eminent operators; at one time resorting to castration, at another to vitriol and caustics, the potential and others, the steel clamp, suture of gold, invagination, etc.

Paul Ségond,[1] in his valuable treatise on hernia, informs us that for several past centuries, from time to time, operations for the radical cure of hernia have attained considerable popularity; but they have fallen into ill-repute and been condemned, to be again revived. From the graphic description which Ségond gives us, we can see that the methods and technique of operation in bygone times were manifold and varied, and that so thoroughly and completely have the ancients gone over the field, that but little remained for the moderns to improve on. Hence we see that the vast majority of certain modern hernial operations, bearing the names of various surgeons, are not new at all, but have each and all, with few exceptions, been performed many centuries since. The cardinal object in view, in all cases and at all times, has been the same. The characteristic of the attitude of surgeons towards hernial operations, has been towards extremes.

As recently as twenty years ago, but few, if any, operations for hernia were countenanced or permitted, except in cases of strangulation. Now, the opposite practice prevails. Not here in America alone, but in all the principal countries of Europe, every sort of visceral protrusion through the crural or inguinal rings is, by many, regarded as appropriate for active, surgical intervention.

But no operation yet devised will always prove permanently curative, in any class of cases. Surgical methods, however, will nevertheless, in a certain proportion, cure the hernia. In some it may effect no improvement, and in certain varieties, the mortality following operations on them is very great, regardless of what skill may be employed.

With a view of reaching the middle ground and defining those cases in which surgical operation may seem permissible, and describing those cases in which we should decline the application of sanguineous measures, these notes are submitted to the consideration of my professional brethren.

A Few General Considerations on Operative Herniæ.—There are certain conditions which should not be lost sight of, in all hernial operations, regardless of whether they are hospital or private cases.

To commence, we should have a thorough familiarity with what might be designated the *natural history* of hernia; its complications and almost infinite varieties; what we may look for by Nature's unaided powers, and what may be accomplished by a tentative therapy, in effecting a cure or placing the hernia in a comfortable position. Before a thought of cutting should enter our minds, in hernial cases, we should weigh well the consequences; not the immediate only, but the remote as well. Without question, in a considerable number of cases in which relapse occurs after operation, the hernia may become more painful and unmanageable than it was before anything was attempted, in the way of a radical cure.

Hence, we should, before resorting to radical methods, consider carefully the possibility of relapse, and likewise warn our patients of its possibility. Much will depend on the class of patients which we will have to deal with, for the permanency of cure, will in a large measure depend on the intelligence and disposition of the patient.

But, as has been stated, many herniæ will relapse in a considerable proportion, regardless of what operation may have been employed. Indeed, Dr. W. T. Bull, of New York, at a recent meeting of the American Surgical Society, showed by an elaborate array of figures, that the recurrence of the protrusion is so general, after surgical interference, that the employment of the term *operation for "radical cure"* should be abandoned altogether. And the distinguished French surgeon, M. Paul Ségond, in his work printed ten years ago, put great stress on the fact that any of the operations might kill—*peut tuer*—and that none, of any description whatever, is ever a justifiable procedure in herniæ, "except those in which the dangers from delay are in direct proportion to those entailed by surgical intervention, and then only when all other expedients have failed."

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[1] Cure Radicale des Hernies, Traité.

Félizét,[2] on the other hand, is an ardent advocate of operation in hernia; yet he does not hesitate to openly avow it, that the surgeon should never permit himself to be swayed, in these cases, except through humane impulses. "While," he says, "anæsthetics have rendered the most tedious and formidable operations painless, and rigorous antisepsis has rendered septic infection impossible, yet neither has changed the morale of our art, and hence the scalpel should not be taken up, except in those, on whom palliative measures have proven useless and the hernia becomes progressively worse with the advance of age."

As all herniæ operated on, in which the patient survives, are invariably radically cured, and quite a number remain so during life, to the great comfort of the formerly afflicted, it seems absurd to ask us to disregard the evidence of our own senses.

No sort of operation known in surgery can, or has, ever perfectly reconstructed anything. We *cure* a man of a dislocation, a fracture, a fistula or a stricture. But have we removed the causes which led to those mechanical and pathological conditions, or have we been able to restore anything like perfection?

Any one who has ever carefully dissected the inguinal or crural structures in a hernia, of any age, will always, on a critical examination, discover a defective development, a want of symmetry and uniformity, in those anatomical structures which support the abdominal contents. Hence, he who pretends that any sort of operative measure, no matter how skilfully performed, will ever accomplish more than improve the herniated condition by confining the viscera above, or so placing them that they will occasion but a minimum of future trouble, trespasses too far on the credulity of his professional brethren, and gives utterance to what is not strictly true.

The radical cure of hernia, then, is an accomplished fact, and must remain, with the same qualifications as when the words radical cure are employed in any other surgical operation.

The operation, another says, "may kill." Very true—and so may the simple scarification of the arm for vaccination give rise to mortal gangrene or tetanus. The extraction of a tooth may be followed by instant death or a dangerous hæmorrhage.

Dr. W. T. Bull, in the essay alluded to, in speaking on the dangers of the operation, says, "the mortality is practically *nil.*

It is interesting to note the present attitude of M. Paul Ségond, as compared with that which he occupied ten years ago, when his invaluable contribution on hernia in general, was published. Then, strongly opposing hernial operation, and conceding an operation with a view of effecting a cure of hernia seldom justifiable, except in special cases; now, after a lapse of ten years, he says: "I regard the operation for the radical cure of hernia an excellent one and frequently perform it for every species of the deformity." (De La Valeur De La Cure Radicale Des Hernias au Point de Vue Du Résultát Définatif.—Congrès Francais de Chirurgie, 1890.)

That the operation for the radical cure of hernia has attained for itself a legitimate position in the field of surgery is best proven by the fact that to-day, in every civilized country of the world, it is being performed on a large scale and in the vast majority of cases, with the most gratifying results. However, with this as with any other surgical operation, it has its limitations. In properly selected cases, it is an inestimable boon, excelled by no other in mechanical therapeutics; while in many others, it is little better than a barberous mutilation, which leaves the patient very much worse off after it than if nothing whatever had been done, or even destroys life. It would not then, in any sense, be regarded a cure-all, but only an expedient, which should be employed, only when other simpler, safer and easier methods fail.

Where must the line be drawn, between the selected and the rejected; those which are appropriate subjects, and those which are not?

In order to answer this question, it becomes necessary to first consider the different varieties of hernial disease; those which are spontaneously curable; those which may be supported by the bandage, and those which, with the advance of time, not only become more painful and uncomfortable, but are likewise more prone to strangulation. We must also examine into a diversity of factors of an etiolgical, anatomical and clinical character. Accordingly it becomes necessary, for convenience of description, to group and classify the cases.

1. Hernia in early life, under the tenth year.
2. Hernia in advanced age.
3. Male hernia.
4. Female hernia.
5. Congenital hernia, proper.
6. Acquired hernia, so-called.
7. Laparotomy-hernia.
8. Hernia in those suffering from constitutional disease.

Regional Division:—

1. Complete inguinal hernia.
2. Incomplete inguinal hernia.
3. Inguinal hernia in female.
4. Crural hernia in female.
5. Crural hernia in male.
6. Umbilical hernia in female.
7. Umbilical hernia in male.
8. Ventral hernia in both sexes.
9. Obturator, lumbar and perineal.

Division on a Basis of their morbid Anatomy and Pathology:—

1. Simple hernia, in general.
2. Incarcerated hernia.
3. Strangulated.
4. Enterocele.
5. Epiplocele or entero-epiplocele.
6. Hernia complicated by pathological changes in contigious parts.

Infantile hernia is very common, either of the umbilical or inguinal typlo. With the male infant it is, no doubt, attributable either to a maldescent of the testes, to phymosis, or to a partial atresia of the urethra.

In ectopic-testis, the organ, as it passes through the inguinal portals, the openings which its pressure effects, often carries with it a fringe of omentum. It may even cause adhesions with a coil of intestine, and lodge it in the scrotum. When neither of these mishaps occur, it may descend late, in intra-uterine life, so that the funicular process of the peritoneum or the rings have not completely closed; and, in consequence, we may have the congenital hernia of the anatomists, or a protrusion through the fascia-propria-abdominalis, complete or incomplete. Besides, we sometimes meet with a spasmodic condition of the cremaster muscle, or the gubernaculum, which might be aptly termed the *flitting testis.* "Now we have it, and now we haven't." A remarkable case of this description was once sent to me for operation, in a child two years old. On the left side, he had an ectopic-testis. At one time we would find the testis in the perineum; then in the scrotum, or in the inguinal canal. And, again, what seemed most extraordinary, it would disappear altogether, mounting out of sight into the abdominal cavity, to appear again, in a day or two, outside the rings. Everyone knows that when the testis is permanently arrested on its way downward, that the presence of a hernia is almost invariable.

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[2] Félizét, Cure Rad. des Herniæs Particuliarement ches les Enfants, p. 12.

True umbilical herniæ are quite common in babies, particularly females, during the first year. When the naval aperture fails to close in promptly after delivery, then rupture appears. There may be an excess of abdominal viscera, or the clothing is badly adjusted. Indeed, the cause of this parting of the umbilical scar doesn't always appear by any means clear in infancy. There do not seem to be any cases on record, of death from this sort of ventral protrusion in infants, nor evidence that the general health suffers in consequence of it.

The vast majority of cases of hernia in infancy, disappear of themselves by tentative measures, by the use of the bandage or truss; with restriction in physical exercise, proper clothing and dieting, before the tenth year; though later in life the majority of them will relapse again at varying intervals, after maturity. But there is a considerable number of these hernia which are rather aggravated than benefited by the retentive apparatuses; their pressure setting up an inflammation which extends down the sac, with the spermatic cord, or causes a fusion of the projected viscera, when thereafter, their return becomes an impossibility.

With umbilical hernia of the kind considered, it is seldom, if ever, that any sort of surgical intervention should be permitted, for they are usually by simple means, readily and permanently cured.

My own experience has convinced me, that every case of hernia in the child associated with ectopic-testis should be operated on promptly, for its radical cure. It goes without saying, that in infantile inguinal hernia in the male or female, a very careful examination should be always made; and when we suspect that the bladder, ovary, or uterus has left its normal moorings and passed out of the abdomen, an operation is imperative, either for their excision, or return to their normal abode. Dr. O. P. Barber, of Saginaw, Michigan, last year reported a case in which he encountered the uterus in a hernial sac when operating, (*Am. Jour. Gynecology*, Oct., 1891) and Boyer cites cases in which the herniated uterus has become the seat of pregnancy, the living infant being delivered through a large gash, made through the walls of the strayed uterus. He mentions also, several cases of large vesical calculi having been removed from the bladder, when in the same situation (*Malad. Chirurg.*, tome iv, page 207). A young lady has come under my observation who had been an invalid since her menstrual period. After an enlarged, inflamed, herniated ovary, which had been lodged in the canal-of-Nuck was removed, she promptly recovered perfect health. In any case these complicating factors discovered, require prompt surgical relief, the earlier the better.

When a truss cannot be comfortably worn, or when it fails and we have an incoercible hernia, unless the child will submit to long confinement in bed with a proper and systematic dieting, the question of dealing with the case by radical measures arises. In every case, however, we should endeavor as far as possible, to remove the exciting cause; we should perform a circumcision, free the urethra, or rectum, and adopt the simple prophylactic and curative expedient, which has been recommended by Dr. Frank Parsons, of Boston, in these cases, viz.: in all cases of infantile hernia of whatever description, always throw aside every sort of binder, which may constrict the abdominal muscles, and allow the infant the fullest possible measure of diaphragmatic movement. (Jour. Am. Med. Ass'n. Sept., 1891.)

The hernia of the aged—another extreme of life, unless in very exceptional cases should not be interfered with. At this epoch of one's existence, the blood vessels have undergone degenerative changes, the sac has become, so inextricably blended with the elements of the cord, that its isolation is often difficult and sometimes impossible. Strangulation in the aged is a rare event. I have never seen it in one over 65 years in either sex. There is scarcely anything except this latter condition, which will ever afford us, any justification for operation in this senile state.

Hernia in the male sex, being so common and will occupy us so frequently, that it would seem, that something might be said of sexual peculiarities, in their bearing on the treatment. The chief difficulties in the way, in the treatment of male hernia, are the laborious occupations of the majority of men, and the great trouble in effectually barring the portals of hernial escape; while yet preserving the spermatic cord, from immediate injury, or from the ultimate pressure of a contracting scar. Yet, notwithstanding these drawbacks, so much relief, and to so large a number has been given, and so many permanent and enduring cures have been affected, as to not only warrant a continuance of operation, but also stimulate us, to renewed efforts, in devising means, by which they may be shortened, simplified and rendered more and more effectual.

However, every case must be seperately studied, before we can always, come to a final conclusion; not only, as to the particular operation; but, the most appropriate to each case; nor should we make forecasts as to final results in every case.

Female Hernia.—Female hernia, as it is much more rare, than the opposite variety, we have been in the past, less frequently concerned with its management. Nevertheless as womens' herniæ are commonly more painful and liable to mortal strangulation, the safest and most effectual manner of relieving them should engage our most serious attention.

For anatomical reasons, they have, but seldom, inguinal hernia; for the reason that they have practically no inguinal canal; this rudimentary passage being always completely obliterated in the adult woman and never permitting of any extraneous substance to enter it except, in cases of congenital defect, in development.

Crural hernia is the phase with them which visceral protrusions so often take. As many of these herniæ are unmanageable to truss-support, and threaten strangulation, operative measures are not unfrequently invoked for treatment. Since laparotomy has become so common an operation, we are beginning to see a considerable number of cases of eventration, more or less of the abdominal viscera, which make their way through the weak or enclosed fascia propria, into the subcutaneous tissues, thereby constituting a sort of traumatic hernia, which I have designated laparotomy-hernia or rupture; for their affinity to laparotomies. When these are discovered and treated by appropriate pressure and support, in their early stages, much benefit may follow. But when they have attained a great volume, surgical intervention may be considered.

At the late meeting of the British Medical Association, Lawson Tait described a method of treating hernia, by making an abdominal incision and drawing the sac and viscera upward, then closing the ring from the inside with the aid of a suture. This he particularly advised to be always done when one did an operation on a woman for the removal of a tumor, taking advantage of the opportunity when the abdominal cavity is open, to extract the hernia and effect a cure. His views, in the Section on General Surgery, before which his essay was presented, met with but little support, though it was generally conceded that in these hernia-bearing women, who were to be laparotomized, the idea was a good one, in simple reducible herniæ.

Congenital Hernia.—I have grouped under this head every sort of hernia which is visible at birth. As a rule, on examining the scrotum after delivery, it will be found that boys have a scrotal development rather out of proportion, in volume, for their general development. We will always observe that the cremaster muscle is of considerable thickness and density, and that there often is a conical contour of the spermatic cord from the expansion of the fibres of the external oblique, at its external outlet, giving an impression to the touch, and the appearance to the eye, of a hernia. My own impression is, that in the vast majority of male infants born, the funicular process is not completely closed for varying periods after birth. In those where no impediments to the emunctories are found, and where the child is not taught to walk too early, it will usually close of itself during the first year; while on the contrary, under adverse circumstances, the opposite will obtain and a hernia may present. Hence, the mere fact that this funnelling is present, always more or less marked on one side than the other, is no reason that we should institute any sort of active treatment. Nature is competent to deal with this incomplete evolution. It is one of those manifestations which illustrate how often the infant reaches the world, in a sort of incomplete state of development, but in which, under a favorable environment, time will obliterate apparent defects.

There are now and then met with at birth, nevertheless, herniæ of considerable size, which are quite irreducible. Opinions are at variance as to the proper course to pursue with them. My own plan has been to recommend immediate operation, supplemented by the use of the truss. I have operated on the fifteenth day after birth, on a large scrotal hernia, and afterwards exhibited the baby before the Harlem Medical Association, the result being most excellent. And as many as a dozen I have treated by radical measures, under one year of age.

In a general way, however, unless there are some special and pressing indications, it is much better to follow the rule of Félizét, viz.: to employ first, palliative means, only, and not operate until children are over whooping-cough and measles.

Acquired Hernia, So-called?—Authors are accustomed to set down the causes of hernia, as predisposing and active.

My own experience has led me, to regard hernia of every description, as always, in *every instance*, as being attributable to so-called predisposing causes, solely and alone; to congenital ante-natal conditions; the active cause, being an incident only, and nothing more; bearing about the same relation to the infirmity, that a local injury does to a cancerous growth; hence the reason that I have intimated a doubt in the above designation.

It will be found on rigid scrutiny and a painstaking examination, in the vast majority of those so herniated, that they either had the disease in very early life, or that they had a sense of weakness at the seat of the hernia for a considerable time before it appeared. As the infantile hernia, is either undiscovered, or treated by a truss, and has disappeared before the child reaches the age of reason, he has no recollection of it, so that when it appears, only, after the lapse of several years, long after his parents have died, perhaps, he being ignorant of ever having had the infirmity formerly, he may in all sincerity deny its previous existence. Mr. Thomas Bryant in his excellent treatise on surgery; says, that the greater part of those early cases disappear, before the tenth year; but that later, when the abdominal muscles are put on a severe strain, through violent exercise or labor, they recur, in the great majority of cases. Inasmuch, as in all, which I operated upon, under one year of age, the sac was in every case, thick, tough and firmly adherent to neighboring tissues, it was evident that the *fascia-propria* had been extruded a considerable time before birth; probably contemporaneously with the descent of the testis. It is very probable, that in all those cases of cure of hernia in infants, the viscera are returned to the peritoneal cavity, the neck of the sac contracting only; hence in later life, on severe strain, its orifice is suddenly stretched and the viscera slide downward into a pouch, which awaits their advent.

It will be seen, then, that while tentative measures, serve a most useful purpose in early life, and so remedy very many hernial infirmities, that they never give any trouble, it is also evident that these herniæ constitute the ground work of the acquired, or consecutive variety later in life.

The treatment of the acquired variety of hernia, must be governed by circumstances; whether it is strangulation of very great volume, simple or complicated and other factors, which will be considered later on. It may be said, however, in a general way, that in this class, when a comfortable support can be tolerated; when there is no tendency to strangulation, in carceration or *hydrops Vaginalis* no operation is called for. Those acquired herniæ, so-called, are peculiar to women; as hernia with them of the congenital type is rarely seen; for it is usually with the advent of menstruation or child bearing that the infirmity makes its appearance.

Laparotomy Hernia.—It is said that from 25 to 30 per cent. of women laparotomized, suffer sooner or later, from hernia, through the line of incision. They constitute by all odds, the most unmanageable and melancholy phase of this infirmity, that we are ever called upon to deal with. They anatomically possess a close resemblance, with those large, massive exomphaceles occasionally met with in middle-aged, child-bearing women. Like them, their serous investment is of a purely adventitious description, as they have no true sac. As they make their way through the divided lips of the dissundered gap they, push the fascia propria aside and press on, sending prolongations into the inter-muscular spaces and under the integuments, which give rise to an irritation, that ends in a plastic inflammation. A webbing and netting of the capillary vessels follow, in consequence of which in time, the vascular structures of the abdominal walls and the chylopoietic viscera become intimately anastomosed. Muscle, tendon, ligament, aponeurosis, omentum, mesentery and intestine, become, in time, inextricably bound together. The portal through which this enormous mass escapes, very often remains of rather limited dimensions. One case on which I operated, wherein the hernial mass was larger than an adult head; yet the opening in the middle line, through which it escaped was no larger than would admit the finger. In this unfortunate class of cases, as time advances, one coil of the intestines will follow another, the mesentery so stretching as to permit the practical eventration of all the movable viscera. The economy adapts itself to this extraordinary derangement of the organs, so that, the processes of digestion are not seriously interfered with, except in very aggravated cases. Nevertheless, they practically cripple the patient and render her unfit for any occupation which requires activity and strength.

If seen, when they first appear and when they are of diminuttve volume,with few exceptions they should be promptly dealt with, by surgical operation. But, when they come under our observation, only when they have attained considerable size and have existed over many months an operation undertaken for their alleviation or cure, is attended with considerable danger to life. The necessary expansion of so large a quantity of intestine, the extensive hæmorrhage, are elements of danger, and what is the worst of all, is the calamitous effect on the respiration, caused by the sudden return to the abdominal cavity,of so large a mass. One only alternative, then, is mechanical support, such as is afforded by a bandage or a sort of sling. Certainly, in the event of strangulation, we must not hesitate, to immediately operate. But, our intervention here, has no parallel in technique, with that which we commonly resort to, in inguinal or crural hernia. Our aim should be, to simply relieve the restriction and nothing more; leaving the incarcerated viscera in their newly found abode, without making any effort whatever, to return them.

Hernia in those Suffering From Constitutional Disease.—The question often rises, when patients apply for treatment of painful, incoercible or dangerous hernia, whether, when they are suffering from organic disease,we are justified in advising radical measures; and when not, what alternative can we offer? It is well known, that many constitutional maladies often pursue a very chronic course and that not a few of them, pronounced incurable get well, when properly treated. This is notoriously the case, with the pulmonary, renal and hepatic disorders. However, as a matter of justice to our patient, unless his case is one of special urgency, tentative measures only, should be enjoined. It is a curious fact, that in reviewing the literature of hernia and recalling my own limited experience, there appear few records of strangulated hernia,in those suffering from serious chronic disease. Yet, there are, no doubt, occasionally cases in the unsound; male and female, in which an operation should not be refused. Heretofore, in renal, cardiac or pulmonary diseases, we can clearly understand why respiratory anæsthetics should be eschewed; and hence surgical measures contra-indicated. But, since the discovery of the valuable analgesic action of cocaine analegesia, this objection does not obtain. Many times have I demonstrated this, in male and female hernia; strangulated,incarcerated and reducible; with a successful issue in most cases. A hernial operation of convenience, in a delicate, sickly child or adult should never be entertained.

Regional Division of Hernia. Complete Inguinal Hernia.—As its name implies, this hernia indicates complete clearance of the two rings and the entire canal; hence we can appreciate the fact, that the cure entails its complete return, back, through the entire path which it traversed. Now, if this sort of protrusion were a sudden and abrupt event, analogous to a dislocation at a joint there would seem no reason, why it should not be treated on the same precise principles; for a hernia is always essentially a dislocation. If the capsule, ligament, tendon or muscle is lacerated or injured in a dislocated joint, after the displaced bone is restored, we place it in the best, possible position for its complete practical restoration.

In an acquired,complete inguinal hernia of the reducible type, we seek a cure, by the return, entire of the wandering structures. But, we have impediments, at times, which make their return, difficult and their permanent sojourn, in their normal abode impossible. The sac has acquired adhesions. We empty it but leave the receptacle, to invite hernial return. True, we may secure a sealing of its lumen by adhesive inflammation. The rings are abnormally wide. There is an undue lengthening out of the mesenteric ligaments and there may be a want of proportion in the capacity of the abdomen and its contents; as we see, in those cases, in which, when,we crowd back, a hernia, with a truss on one side, a fresh protrusion appears on the other. This is the phase of the infirmity, which is more managable to truss-pressure, than any other. It is only when a proper truss cannot be secured; when the hernia has attained a great size or threatens strangulation, that operations are called for here. Complicating factors, must influence our course though, as in other cases.

Incomplete, Inguinal Hernia.—Incomplete hernia or bubonocele, is less frequently seen than the complete.

Anatomically, it consists in the protrusion being arrested in its passage through the inguinal canal; or having slipped through the interior aperture, fails to lodge in the scrotal pouch. In many varieties of it, when one's occupation is not of a very laborious description, and it gives rise to no inconvenience, it should be left severely alone. It having become impacted, it so effectually blocks the passage, that nothing can pass it. Those bubonoceles, however, may contain within them, an undescended testicle or a neoplasm; and they, through constant pressure on the spermatic cord, may cause its atrophy; or they become strangulated at the internal ring. With the greater part of them, there is a tendency to increase in bulk, if no restraining measures are employed.

They are commonly borne without serious distraint, by the use of a supporting bandage. Though there are so many sequalæ which they give rise to, in several cases, that operative measures may be occasionally considered.

Compression of the vascular structures of the cord, in time, lead to diminution in sexual power, spermatocele, hydrocele or varicocele.

Not long ago, I was consulted by a veterinary surgeon who had a small, incarcerated bubonocele, over which, he wore a truss. He was a hearty, vigorous man, of forty years and had a wife of an ardent temperament; whose demands he had not been able to satisfactorily supply, for some time, before he consulted me. He came to me believing, that I would do an operation; for, his observations on the lower animals, led him to believe, that the hernia was at the bottom of his sexual impotence.

On examination, while I could discover no positive atrophy of the testis, yet it was of a soft, flabby consistance, on the side the truss was worn; besides, its fellow was rather undersized, for a man of his stature. The veins of the spermatic cord although not decidedly varicose, were nevertheless, enlarged and thickened. On making a very thorough examination of the hernia, I concluded that the small nodule which occupied the inguinal canal was not the bowel; and, it being firmly fixed, by adhesions making no impulse against the finger on coughing. I decided to recommend him to discontinue the truss and wear nothing whatever, except a hank of woolen yarn; and this only on any day when he had to perform laborious 'duties. My advice was followed with the most gratifying results in every particular. The hernia has not increased in size and the sexual powers are all that could be desired.

There are cases of this variety, of hernia, however, in which, the most astute must consider carefully, before advice is given. They must not only be very carefully examined, but thoroughly studied as well; for not only is our patient's future comfort and happiness at stake, but even his life as well.

The following case illustrates this fact.

A man of forty-two, came under my care at the Harlem hospital four years ago; for the treatment of a strangulated, incomplete inguinal hernia. His history was that since a boy of ten, he had a small, fullness in the right groin; for which, for many years, he had worn a truss. But, for more than ten years previously, to entering the hospital he had thrown the truss aside; no trouble coming from it, until now. He was married, and the father of five children.

His symptoms being urgent an operation had to be immediately performed for strangulation. As the tissues were divided and the sac opened, there, side by side, with a strangulated intestine, lay an undeveloped testis. This man was a monorchid. He never properly rallied and died two hours after operation. As his scrotum was much distended, it gave the appearance of symmetry. Had the practitioners who had first seen him recognized the true pathology of his condition, instead of making prolonged and futile taxis; or had they advised operation twenty years earlier, he undoubtedly would have completely recovered from operation and have been cured of his hernia as well.

Hence, in these cases, before we pronounce an opinion or specify the line of treatment, to be followed, we should, in every instance, be assured of the presence or absence of the testes. If both testes have descended, then we may, in all cases, with few exceptions depend on tentative measures. But every time, when we discover a bubonocele of any considerable size and that the testicle is absent, on that side, the organ should be cut for, and forthwith removed; at the same time executing the technique for radical cure. It may be well, to not forget, that operations for bubonocele are not so satisfactory, in their permanent result, as are many other herniæ. The pressure of a large mass against the abdominal wall, over many years, causes a thinning and wasting of the aponeurotic structures, which, when operated on, possess a low vitality; so that in many of those, we operate only when we must, for strangulation, for example; or, to put the hernia in a more supportable position. I am not certain, but in many of those cases with ectopic testis, an incision for its removal without any unnecessary mutilation, would, in the end, accomplish as much, durable good, and less danger to life; than an operation of a more tedious and dangerous character.

Direct Inguinal Hernia.—The diagnosis of direct inguinal hernia is a physical impossibility. It is true that by the aid of the scalpel and a delicate dissection, it may be made out; but, not by any other means. I have never met with but one case, which, I was quite assured, was a hernia of this type, at the time of operation. My conviction is, that it is a very rare pathological entity. Indeed, in those old inguinal herniæ of considerable volume, in which the inguinal canal becomes quite obliterated and the hernial vent, is simply a large hole, in the aponeurotic wall, it doesn't seem, by any means clear to me, how even on dissection, the differential diagnosis of the direct, from the indirect, is possible. Indeed, I would deny its possibility. Anatomists would tell us, that the one, should be readily recognized, from the other, by its coverings. But, we are not dealing with normal structures. They have undergone such pathological changes that the investing layers have become greatly changed in their histological elements; atrophied, hypertrophied; or fused together by adhesive inflammation.

Happily, it is of little consequence in treatment, except in operation, when we are told, that in the direct variety, that as the mass comes down to the inner side of the epigastric artery, the edge of the scalpel must be carried in a certain direction, if we would avoid a dangerous hæmorrhage. Those anatomical refinements are of little consequence, when we come down, to the act of operation.

The direct, complete inguinal hernia, when of long standing; when the outer walls of its sac have become firmly bound down to the cord, when the testis and perchance the contents of the sac have become adherent to its inner serous surface, and a large breach is made through the abdominal wall, we must always consider, it as an infirmity of an inoperable description; which can never justify surgical intervention, except, in the event of a strangulation. If the interpretation of this hernia is correct and it has been properly defined; then, even though no adhesions were present, the excision of its dense, tendinous sac; leaves a hiatus in the abdominal wall, liable to lead to unfortunate consequences ultimately.

Inguinal Hernia, in the Female.—It is said that inguinal hernia in the female, is about as rare, as femoral, is in the male. The morbid anatomy of female, inguinal hernia, is comparatively simple. The presence of the vascular supply of the testicle, coursing through the inguinal canal in the male, gives rise to a multiplicity of painful complications; and their absence, in the canal of Nuck, in the female renders this form of hernia with them, seldom a source of much inconvenience, except in the marriage state.

At the crest of the pubic brim, the parts being so deeply covered with fat and hair, a hernia unless of considerable volume, or morbidly sensative, is apt to be overlooked and the patient may go through life, without a suspicion of its existence.

Inguinal hernia then, in the female is devoid generally, of those attributes which cause so many painful concomitants; as they are commonly small in volume; and when reducible are easily coercible. However a large number of them are painful, and quite rebellious to treatment by the truss. They may be reduced and pressed backward by this instrument, but they cause so much uneasiness and misery that the patient often feels much more comfortable without any sort of mechanical aid and throws the apparatus aside. This is explained, by the fact, that in female inguinal hernia, any single one in part, or complete, of the genital organs may occupy the sac and constitute the protrusion. If one of the reproductive organs has not come down, directly; the omentum in its descent, having formed adhesions with some one or more of them, or their appendages causes all these symptoms, which we might any time look for in ovarian or uterine displacements. Such was Dr. Barber's case, which had baffled medical attendants. Not being able to find the uterus, on vaginal examination and discovering that his patient had a large, unmanageable inguinal hernia, he decided to operate, when he found the entire uterus, wholly outside the abdominal cavity; bound down by old adhesions to its peritoneal investments. The doctor then proceeded to secure a radical cure, by resecting the uterus and closing in the chasm. (*Am. Gyn. Jour.*, Dec., 1891.) Dr. Perry Schoonmaker exhibited before the Harlem Medical Society of New York, in March, 1892, a year old female infant who having a large unmanageable inguinal hernia, he cut down, on it and found it to consist of a prolapsed ovary. The doctor practiced the most praiseworthy conservatism. Freeing it from its attachments, he returned it to the peritoneal cavity and effected a permanent cure of the infant. For other reasons, besides those enumerated, in the vast majority of inguinal hernia in females; as soon as the hernia is discovered it should be treated by prompt, surgical measures. Strangulation in the female is terribly mortal. Very much more so than in men. A curative operation prevents the possibility of it occurrence.

Each successive confinement is almost certain, to aggravate the infirmity and increase its volume. The canal-of-Nuck, through which the viscera escape in women, can be, without endangering any organ, solidly, hermetically sealed up and very possible prospect of permanent cure offered. To the young woman contemplating matrimony, in order to remove the blemish and infirmity of hernia, an operation should in every instance be recommended. Applicants are admitted into the cavalry arm of the British service after they have been cured, by surgical operation of their herniæ; who had been previously rejected. As a prothetic measure then, in addition to others, the simple, safe and efficient operation of kelotomy, may, in every case of inguinal hernia, in the female be taken advantage of; as offering in the greater part of them, everything that can be expected. The unfortunate young woman, heretofore aware of her infirmity, is conscious of her physical inferiority, bewails her misfortune and dreads the approach of the time, when she can no longer conceal its existence and she is open to the charge, of having been physically unfitted for the married state. Surgical intervention in her case, instituted under proper environment, is devoid of peril and the operator who carries his incision well over the lateral slope of the *mons-veneris*, being cautious to limit its extent, will so completely obliterate every trace of the scar; which, will be effaced by the re-growth of the pubic hair. The earlier in life the operation is performed the more complete, will be the assimilation of the cicatricial tissue and the total disappearance of the former deformity.

Crural Hernia, in the Female and Male.—Femoral hernia in the adult female is the most common of all varieties. For many anatomical and physiological reasons, operations for its effacement are very often unsatisfactory and are frequently followed, by relapse; so that in only exceptional cases can they be regarded, as appropriate adjuvants in the way of cure. Hence, it is in only the minority of them, that active surgical interference is demanded. But, these are sufficiently numerous to always warrant a careful study of them, before we attempt their cure or relief by any therapeutic resort, which entails the loss of blood. The great obstacles in the way, in treating female, crural hernia are, the presence of the two great blood trunks. of the lower extremity, which pass immediately through, or are in close contact with the common hernial sheath, the *fascia propria;* and, with the married female, the recurring strain of parturition; the varying volume of vena-saphena; and, puerperal phlebitis in the veins of the lower extremity.

Many times, in operating on femoral hernia, particularly in the strangulated variety, have I met with such close and intimate fusion of the walls of the vein with the sac, that it required a very delicate and tedious dissection to separate one from the other. On one occasion, while making such a dissection, in a femoral-epiplocele, I accidentally, opened into the femoral vein. Moderate pressure, however, easily controlled it and a permanent cure resulted. When, after considerable time, the saphenous opening in the fascia-lata, has attained to increased dimensions, the femoral curve is practically effaced, and nothing remains, but a large ring. In cases of this type, the permanent closure of this large portal, in such a manner, as will prevent the viscera again slipping down, under the crural arcade, during the strain of active labor. is impossible. In any event, extreme caution must be always observed here, while endeavoring to close the vent, not to excite so much inflammatory reaction as will cause such pressure on the vein as will in any way interfere with the free return of the blood, from the lower extremity. The great difficulty in accomplishing this, constitutes one of the almost insurmountable impediments to the more general adoption of operations for femoral hernia.

Which then, are the cases of femoral hernia, that may render operations on them, imperative? They are in epitome, those of strangulatior the incoercible and the painfully incarcerated.

In my experience, operations for strangulated, femoral herniæ in women are by far, less fatal, than for inguinal, in the same sex.

By incoercible, is meant those herniæ, in which a truss cannot retain the hernia with comfort; and, there is a tendency to symptoms of impending strangulation. Here, clearly, where life is imperilled, or made wretchedly miserable, there is scarcely any middle course; and, if there are no pronounced contra-indications surgical relief should be immediately resorted to; for, even if permanent cure is not secured, danger of death from strangulation is forever obviated; and besides the protrusion is so placed, as to be comfortably supported, by a truss.

We should be guided by the same general principles, in the treatment of femoral hernia in the male, as in the female; except, that owing to the wide physiological difference in the pelvic functions of the two sexes, hernial operations, for this phase of the infirmity offer much greater prospects for successful results in males. Nevertheless, when a femoral hernia occurs on the same side as extensive varicosity of the saphenous vein and its tributaries, we should hesitate, and weigh well the consequences, before we resort to any procedure which may, in any way, embarrass the free flow of the veinous current through the great trunks in the ham.

Umbilical Hernia; Exomphacele, Median-Ventral Hernia.—I have seldom seen umbilical herniæ in the adult male; although I have met with a considerable number in the matured, child-bearing woman.

In approaching the consideration of the treatment most appropriate, in this class, we must constantly bear in mind the morbid anatomy and clinical history of umbilical hernia; its causes, and the conditions which favor or retard its cure. In those naval protrusions so commonly seen in early infancy, which give rise to no serious symptoms and which disappear of themselves, any sort of cutting, to efface them, is little short of a downright mutilation. Impediments to the free passage of the urine, whooping cough or measles may retard their disappearance, but, as age advances and these incidents are passed, the erratic visceras return and the orifice contracts, so that, as a rule, from the tenth to the twentieth years, we will very seldom see this genus of hernia. After they once disappear in the boy, it is very rare that they return. With the female, on the contrary, they often, again, make their appearance, not uncommonly, giving rise to embarrassing symptoms, and often, even menacing life itself. We have seen, that these herniæ spontaneously disappear in infancy; but, in adult life, they occupy a fixed position, in most women, in whom their tendency is rather, to increase than diminish in volume. Certainly, dangerous eventualities may occur, depending in a large measure on recurrent pregnancies and the occupations or position in life, of the afflicted. This being the case, one would on superficial examination of the subject, assume that the return of the wandering viscera, with the simple closure of the outlet, should be the proper course of treatment in every case. It is as a rule, however, unusual, that they give rise to any serious inconvenience; hence the patient would be quite ignorant of their appearance, if she did not see them. With these, the simpler, the treatment, the better; and, it should be directed, as much to the mind, as to the hernia. The assurance, that the slight fullness will probably, never give any trouble; the application of a light, soft belt or binder are ample; with a caution, to avoid any sort of heavy straining; are all that is necessary with this minor class.

The most serious cases of so-called umbilical hernia, however, are rather ventral, than umbilical; *i. e.*, they make their escape from the abdominal cavity, rather above, below, or on one side of the naval aperture, than through it; and, instead of pushing an investment of the peritoneum before them, they rather, by pressure or otherwise, rend this membrane and pass through; hence, are genuine properly so-called; and, in consequence have no true sac, but rather an adventitious investment of areolar tissue.

In order to have an umbilical hernia proper, we must always have the elements of the urachus and round-ligament of the liver, outside the abdominal wall; a very few cases of which are recorded in surgical literature.

Herniæ of this description may attain an enormous size. I saw one lately in a young widow of 35 years, which contained the greater part of the floating viscera; and, which hung down over the pubis. It in no way interferred with her general health; and produced no visible deformity under her clothing. It was supported by a sort of sling belt. Regardless of their size or situation, nevertheless, these herniæ when free from severe pain, or prospect of strangulation, they belong to the inoperable class. The proximity of their situation to the great, central ganglia of the sympathetic, the solar plexus, the usual abundant and intimate adhesions of a heterogeneous character, the muscle sheaths, aponeurosis, mesentary, omentum and intestine, always makes this separation, isolation and return of the extended viscera, a very bloody, difficult and always dangerous procedure. Besides, what is worse than all, the calamatous consequences, liable to follow, the sudden increased intra-abdominal pressure, occasioned by the immediate return, of a mass so long lodged externally, that it practically becomes a foreign body. It has long been observed that the sudden evacuation of a serous cavity is not a harmless measure; and, *per contra*, the abrupt distension of any of them, is always a menace to life. So that, should we meditate a radical operation, we should always commence, by endeavoring to effect the gradual return of the viscera by taxis, and then, when it is evident that tolerance has been attained, we may essay; a plastic operation to close the vent. But, as the greater part of them are incarcerated, we are not able to avail ourselves, of this expedient.

It is only then, in those ventral herniæ, in which the patient is menaced by strangulation, or that they make life unbearable, that a capital operation for their cure, is at all, a permissible expedient. Exigencies will, though, arise, when the surgeon must be prepared to act; and, even in these unpropitious cases, be prepared to promptly interfere and save life in strangulation, in the umbilical region; or in the less serious, do so much as will give comfort and remove all apprehension of future danger, from strangulation. When these herniæ are attended with periodical spells of colicy pains, are incarcerated and painful, the practitioner must be on his guard, for symptoms of strangulation. I saw a case of this type of hernia, during the past year, in which, through failing to recognize it, until too late, a life was lost. The patient, the wife of a physician, had the hernia 30 years. When I saw her in consultation and recognized her real condition, she was having stercoraceous vomiting and was in a collapsed condition, presenting such a hopeless aspect that I deemed an operation inexpedient. Last October (1891) a woman was sent to me suffering from periodical fits of strangulation in an umbilical hernia. Although her hernia was as large as the fist and there was free hæmorrhage; she made a good recovery, after operation and so far there is no sign of of relapse.

Division of Herniæ on a basis of their morbid Anatomy and Pathology. Simple Hernia in General. In Youth.—Under this head, I have grouped all herniæ found in such a position, of such a size and situation, as to give rise to no inconvenience; immediate, or remote; and, which, are devoid of any serious complicating factors.

The human offspring, at the time of birth, has but partly effected its evolution; imperfection physically, at this epoch, of life is the rule. The position which the symmetrical organs occupy, bears but little or no relation to what they will later in life, at the mature stage. Want of coördination and symmetry is now observable on close inspection and many conditions are now observable, which might at first, be regarded as malformations, are but slight deviations, which it was not allowed Nature to complete, before the child was borne into the world; but which time will remedy, provided the offspring survive. These defects, one will most readily observe, in the arches of the jaws, the outlines of the spine, the position of the limbs, and the varying relative size and contour of the cranial and facial appendages, particularly the nose and its septum. With these must be added those simple herniæ, in which, in the absence of coughing or unusual straining, with the infant in the dorsal decubitus the greater part of the time; in the first year, they commonly disappear, as the formative processes advance.

Strangulated Hernia.—Strangulated herniæ, until very modern times, were always, first treated by the tentative means, before radical measures were resorted to. In our own times, there are not a few cases, in which we must follow the same course; but one of the great difficulties, in the way, is, not being able to always say with certainty, what the immediate results of an operation will be.

In the greater number of strangulations we will have such pathological conditions as generally call for immediate relief. They are, pain, inflammation and obstruction of the bowel. In some, we may have the bowel constricted for days and then reduced without serious detriment. While there are other cases presenting mortal symptoms, after a few hours. If we could always promise recovery from operation and a permanent cure of the hernia, we should in every case, at once, cut down on the hernia. But we can promise neither. I have seen many patients die from shock, after operation for strangulated hernia. Certainly, when we do cut them, we should always simultaneously, do the radical operation, for cure.

Those patients so afflicted, accordingly, will be treated by palliative and direct surgical measures. In the old, infirm, we should endeavor to relieve by taxis first. Taxis has its limitations; and, when not skilfully applied, does more harm than good. Hence, when one has used moderate force and failed, unless the patient stubbornly refuses surgical interference, he should desist, and advise liberation of the construction with the knife. I am not sure, but in a large number of cases of reducible hernia, which become strangulated, the patient's prospects would be vastly improved, if topical application alone, were depended on, with complete rest and sufficient morphine to reduce pain, the hernia left to the patient himself to deal with, rather, than to the employment violent and misdirected taxis. It is commonly the experience of hospital surgeons, to meet with cases, in which, the outside practitioner, having exerted himself, in vain, in oft-repeated efforts at taxis and finding symptoms of collapse setting in, sends the case in for operation, at the eleventh hour. Two such cases have come into my service, which didn't survive an hour after they were admitted; one an old man and another, a young woman.

As the operation for strangulation is not a difficult one, and the mortality is very slight, when performed early, we are justified, in almost invariably, advising it, when moderate taxis fails. I am acquainted with no case of restrangulation in any one who has been operated on previously. On the other hand, a case temporarily relieved by taxis is liable any day to again, place the patient in the same peril. Further, although we certainly are not in a position, to guarantee, in every case a permanent cure, when the radical operation is performed, yet, we may assure our patient with every confidence, that the chances are against relapse of the hernia. I can find no statistics on this particular question of recurrent hernia after operation for strangulation; but, in twelve or thirteen operations for the strangulated condition, in my own practice, hospital and private, within the past three years, when I have conjoined to the relief, radical measures for cure, not a single one, to my knowledge has relapsed. and in every instance, the double purpose was accomplished of relieving the strangulation and curing the patient of his painful infirmity. Since the introduction of cocaine analgesia, into surgery when employed by myself in those cases of terrible depression of the vital powers, there have been no deaths; while with the same class, when pulmonary anæsthesia was employed, formerly, the mortality had been considerable; many dying before the effects of the anæsthesia had quite passed away. With those patients who have a horror of being rendered unconscious and are restrained from operation through this fear, no doubt very many would cheerfully submit, if they thought, they might be effectually relieved, in the full possession of their senses, without the infliction of pain. A full knowledge of the powers of this invaluable drug, in hernial operations will no doubt, tend to the much greater frequency of prompt and efficient surgical intervention, in a class, heretofore, reluctant to avail themselves of the great value of the operation for radical cure.

Incarcerated Hernia (of every Type).—The morbid anatomy of incarcerated hernia furnishes us, with an excellent illustration, of the very best work which unaided Nature can perform, in the way of protecting a condition, against accident which an imperfection, in her own processes has caused. And, when the term incarcerated hernia is employed here, it is intended to portray only, that type of hernia, which is held *en masse*, outside the portal, through which it has passed. For, there is scarcely no hernia, (if we except those, which make their appearance and are strangulated simultaneously) that have a peritoneal investment, but are in part incarcerated. We may designate them reducible; but, they essentially are not. *In all old hernia, and, the congenital variety, as well, the sac is invariably bound down by adhesions, is irreducible and hence, is incarcerated.*

An incarcerated hernia maintains an independent existence. It forms new alliances and draws its sustenance from extraneous sources for the main part. By plastic inflammation, it becomes on its surface, and in its center, practically independent of the general, visceral, vascular supply, and is supported by those vessels, which course over its outer aspect, in the periphery, or the areolar tissues.

They are practically of two varieties only; viz.: those which are small, solid and devoid of impulse on coughing. In many particulars this group is harmless, in themselves. They need no truss to control them; for so large an amount of dense, fibrous tissue has been thrown out about them, as to firmly hold them in position. They cannot become strangulated; because there is nothing to strangle. It is then, only, by the enlargement of a passage that their presence maintains and permits a loop of intestine to engage in it; and that they can ever occasion danger. My impression is, that with the great preponderance of them, they are wholly congenital; or else are caused by the malapplication of a truss, which, by its irregular, or undue pressure excites inflammation. When they are of diminutive volume, there can scarcely be a question, but they are not infrequently obliterated by absorption; when so little residue of them remains, that in the inguinal variety, in the male, at any rate, they cannot be isolated from the elements of the spermatic cord. The other variety, is the most numerous and troublesome. They are of considerable size and include intestine as well as hypertrophied omentum. The pouches which contain them, often attain a great volume; especially the umbilical and scrotal types of them. They constitute one of the most lamentable phases of hernia. While the larger seldom immediately endanger life; yet, as they cannot always be relieved, or effaced by art, the victims of them are doomed to pass their days in constant discomfort, the hideous deformity, which cannot be concealed, remaining, to further embitter their existence by inviting the curious gaze of those, unaccustomed to see such deformities.

With this latter type, of incarcerated hernia, nothing can be promised by operation, except in cases of strangulation, where the surgeon must limit his intervention to relieving the constricted neck, unless, the presence of gangrene in the eventrated mass is suspected.

With those, first described in this class of hernia, unless this innocent extension interferes with the nutrition of an organ, or contiguous parts; as by pressure, nothing whatever should be done. I am quite confident that with them, the ordinary truss is only a source of discomfort and nothing more. But, when, as in inguinal hernia, we see the testis undergoing atrophy in consequence of the pressure they cause, or we suspect a twist in the spermatic cord and want to release it, the inguinal canal being opened, we may take advantage of this opportunity to cure the hernia. With these exceptions these innocuous incarcerations should be left alone.

It is only with the incarcerated of intermediate size, into the composition of which, the gut enters, that the question of operation rises and it is in these, that the most brilliant results are observed after surgical intervention. Operations on this variety of strangulated hernia, are prophylactic, palliative and radical. They are principally prophylactic, when we resort to them, to prevent an impending strangulation, or to obviate the tendency, to their enormous increase in volume; as in umbilical or ventral hernia. They are palliative only, when we aim to simply return the bowel and place the hernia; so that a light truss may safely control it.

They are operative, when the hernia is of the congenital type, anatomically; when the testis and abdominal viscera, lie in the same, common envelope, and all, have been welded together, by adhesions; when the abdominal contents can be restored; when a sac is present it can be isolated from the cord and excised; and, when the inguinal outlet can be completely occluded. Irreducible crural and umbilical hernia will be managed on essentially the same principles, as the inguinal type.

It may, indeed, be said, that if those incarcerated herniæ, which manifest a tendency to rapid increase, are not treated promptly by operation, the time soon passes when interference, will be attended with success, or even permissible.

Enterocele and Epiplocele.—A knowledge of the anatomical components of a hernia will go a considerable way, in enabling us, to form an estimate of probable results of operation, and besides a correct interpretation of their condition, will suggest the best line of treatment.

We know, for instance, that a mere spasmodic grip on the neck of a mass of omental fat, an epiplocele can do no harm; but, on the contrary, by reducing the blood supply, it may effect such atrophic and degenerative changes as will in time, practically efface the hernial tumor. We know too, that when we cut for the cure of a hernia, and it is an epiplocele, by excising it high up, a relapse is impossible; for the reason, that the cause of the hernia, has for all time, been removed. With a strangulated intestine, the local and general symptoms are of a startling character and, if unrelieved, are inevitably fatal, in a very short time.

No operation has been or ever can be devised, which will always, or even in a small minority of cases effect a radical cure of an enterocele when of any moderate volume; for its cause yet remains. Its own excessive length or dimensions have not been reduced, nor, has the mesenteric ligament been shortened by operation. When the mass is of a mixed character, partly omental and partly enteric, however, we may secure a permanent cure by excision of the sac.

This difference is important to always bear in mind, when we are undecided, as to which course to advise, and when the patient demands an assurance of probable results. An operation on an epiplocele then, is always a simple, safe and curative measure; while on the bowel, it is not so free from danger and is always of dubious value, as a measure of permanent relief from hernia.

Having had no experience with unusual and rare descriptions of herniæ, as perineal, obturator or lumbar; and, besides, believing that views on the most appropriate management of them, based only, on knowledge, gathered from the text-books and theoretical notions, would serve no useful purpose, I have purposely omitted their discussion. Nor, have I entered into a detailed description of the complicating factors and multiplicity of abnormal deviations of an anatomical type, which are commonly met with in the hernial diseases, here considered, feeling, that while endeavoring to condense as much as possible, rather, too much space, has been occupied. And further, for the reason that as my opportunities for observations continue and time will permit, the description of these, will later, engage my attention.

CONCLUSIONS.

Although during the past fifteen years, very much has been written on hernial operations; much in America, but more in Europe; so far as can be learned in the current, home and foreign medical literature, no one has made an attempt in a methodical manner, in any brochure or treatise yet published, to systematically describe and classify those herniæ which are operable and those which are not. For the purpose, of at least, in part, filling in that gap this essay is offered.

In epitomizing the subject and considering the question of treatment of hernia in a general way, it may be said, with definite certainty. * * * *

1. That inasmuch as no operative scheme yet devised, or even can be; will always effectually remove the causes of every species of hernia; in consequence of this, a permanent cure, is out of the question, in certain cases.
2. The radical cure of hernia may be regarded as one of the most satisfactory operations in surgery. The fact that the disease often relapses, constitutes no valid objection against surgical intervention; for this is commonly the case in the major part of operations performed on the human body.
3. A radical operation for a non-strangulated hernia, which gives no serious inconvenience is not a justifiable procedure and should not be encouraged, unless there are pressing reasons for it, as the presence of a neoplastic growth in it; a prolapsed ovary or other viscus.
4. Hernial operations should not be performed in extremes of age. In very early life, there is seldom pressing necessity for them. In very advanced life, the risk, immediate or remote, to life or health, involved by operation more than compensate in the prospective benefit.
5. Unless, there are especially contra-indicating factors in given cases, inguinal hernia in women should be always treated by a radical operation, which, with them, is so often attended by a permanent cure.
6. As a rule, all operations on reducible, or incarcerated herniæ are radically curative, though the *disease commonly relapses*; nevertheless, the immediate danger of strangulation has been removed and the hernia has been placed in a position, to be more comfortably borne by a truss.
7. Every operation for strangulated, inguinal hernia, should always include, such additional steps, as will effect, thereafter a complete obliteration of the inguinal canal but permit the passage of the spermatic cord and, remove the chances of a hernia again occurring.
8. Very large, old herniæ, in any of the abdominal regions are not operable; except, in the event of strangulation; as their return, is attended, frequently, with mental consequences.

IS AMPUTATION EVER INDICATED IN COXITIS?

Read in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association. held at Detroit, Mich., June 8, 1892.

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I have no intention of describing the methods and dangers of amputation in the hip-joint, but simply to inquire into its indications in coxitis. That it has often been done we may learn from the table in the International Encyclopedia of Surgery. 276 had the operation done on account of disease, 65 of which, at least, had coxitis and many of which had been previously resected. Ashhurst gives a table of 34 cases of primary and 31 cases of secondary amputations for coxitis (probably the same 65 cases mentioned) with a mortality of 31 per cent. He states that the mortality is almost exclusively due to constitutional conditions and very little dependent upon the management of the wound.

Primary amputation for coxitis will, of course, be abandoned as surgeons, little by little, learn the indications for excision and also, that done at the proper time, this operation is not dangerous and the results quite excellent. It is, therefore, only with secondary or consecutive amputation that we have to do, the indication for which, according to Ashhurst, occurs, when after excision the discharge increases and it is evident that caries has recurred and is too extensive for spontaneous recovery, re-excision or, when with the same conditions, the patient's general health begins to fail.

We may properly ask, what the cause is for this increased discharge and the recurrence of caries? The increased discharge depends probably in all cases on improper antiseptic precautions and on the imperfect extirpation of the tuberculous capsule, pieces of which have been left behind, and it may be prevented by exercising due care in this regard during the operation.

The recurrence of the caries is probably less a recurrence than a continuation of the original trouble, particularly in the form of a chronic osteomyelitis in the shaft of the femur, and it is about the treatment of this particular affection that I wish to offer a suggestion in this short paper.

In some of my earliest resections for neglected cases of coxitis I have occasionally found a chronic osteomyelitis and osteitis extending all the way down the shaft of the femur to the lower epiphysis. The periosteum was found thickened, swollen and so easily loosened from the congested and osteoporotic bone, that the whole shaft could be forced out of the wound, leaving the periosteum intact like the finger of a glove. Necessarily we would in such a case find continued suppuration and recurrence or rather continuation of the carious process, unless we removed the whole diseased shaft, in which case, if we succeeded in healing the wound, we would get a useless flail-joint.

It is obvious that to make a resection and leave the diseased bone behind is useless, and to remove the whole diseased shaft produces a useless limb. Amputation has so far been the only resource and the various text-books on surgery recommend this proceeding under the circumstances mentioned.

And yet, by a very simple, easy and reasonable operation we are able to overcome this complication, if I can judge from a couple of cases lately operated.

Case 1.—Augusta P., aged 11, entered the Sisters' of Charity Hospital on February 12, 1892, with the following history: When six years of age she fell down stairs injuring left hip. She has since complained of slight lameness until last May (1891), when it increased, accompanied with fever, pain in the knee, emaciation, etc. Left leg abducted, flexed and rotated outwards; marked lordosis and crepitus in joint. A large cold abscess over anterior part of femur.

The abscess was opened by incision, four inches long, the tuberculous membrane removed with sharp spoon, the wound closed with sutures. It healed by first intention and gave no further trouble. The joint was thereafter resected by posterior incision, the bone being cut through above trochanter minor. The head was found loose in the joint, the synovial membrane of which was tuberculous and was removed. The whole neck and trochanter was in a state of chronic osteitis, no particular primary lesion being found. A chronic osteo-myelitis was found extending down through the shaft to the lower epiphysis, the cavity being found filled with tuberculous masses, softened bone and fluid fat. The periosteum was swollen, thickened and could with ease be detached from the dark red, congested bone. I decided to treat this complication in the same way as I would treat acute osteomyelitis and therefore removed the whole marrow and all the softened bone with a long sharp spoon, made thereafter with a chisel a counter opening into the cavity of the femur above the external condyle near the epiphyseal line, brought a strong piece of silk thread through by aid of a long probe, and after a thorough disinfection of the cavity with corrosive sublimate introduced by aid of the silk thread a long mesh of the iodoform gauze through the whole femoral canal and out through the resection wound. The acetabulum was thereafter plugged with iodoform gauze, the wound partly sutured and antiseptic dressing and a Volkmann's sliding splint with 5 pounds weight applied. The wounds were dressed every six days under narcosis for four weeks, a new mesh of iodoform gauze being introduced each time by being attached to the old one before it was removed. As the wound then looked perfectly healthy, the mesh was omitted and the wound then closed rapidly. The extension was discontinued on April 15, a plaster cast applied on May 4, and on May 10 she left the hospital on crutches in excellent health, having gained 12 pounds in weight. The shortening was one inch, the joint firm and freely movable, all wounds healed. She will not, of course, for three or six months be allowed to use the limb.

Case 2.—Thomas M., aged 13, entered the Sisters' Hospital on March 17, 1892, with the following history: He began to complain in April, 1890, of pain in the left knee, limping, had fever, starting pains at night and emaciated rapidly.

A plaster cast was applied by an orthopedic surgeon and allowed to remain on for three months, the child meanwhile walking on crutches. An abscess was then found on anterior part of femur and lanced, but did not heal. He continued under same treatment till July, 1891, and had since then been wholly neglected.

On entering he was extremely emaciated and anæmic, walked with two crutches. Left limb adducted and flexed, apparent shortening with marked lordosis. A sinus was seen in Scarpa's triangle discharging curdy pus. Under narcosis the sinus was enlarged and was found leading to the joint, which was then resected by posterior incision, the bone being severed above trochanter minor. The joint was found in a state of chronic arthrotitis, but not tuberculous, the cartileges being more or less transformed into a fibrous tissue forming strong adhesions and making the removal of the head quite difficult. The neck and trochanter were found in a state of chronic osteitis with formation of a number of cavities containing tuberculous material and bone-detritus.

The same condition was found extending through the shaft of the femur down to the lower epiphysis. The marrow was removed with sharp spoon, a counter-opening made as in the previous case near the lower epiphysis, the cavity disinfected and an iodoform-mesh introduced. It was changed once a week for five weeks and then discontinued as the wound looked perfectly healthy.

The wounds then closed rapidly. The patient has greatly improved, gained considerably in flesh. There is a good firm joint with free motion, shortening 1¼ inch. He has not been allowed to get out of bed yet.

Since operating these two cases I have found a similar treatment advocated in the *New York Medical Journal* of April 23, 1892, by Dr. C. T. Poore, of New York. He found the conditions described in 21 cases. In 11 cases he cleaned out the central cavity, introduced after disinfection a drainage tube in the counter-opening and the result was nine recoveries and two deaths, one 24 hours after the operation from shock, another three years afterwards from amyloid degeneration. Of 10 cases, in which the central cavity was not cleaned out, eight died and two recovered. In one of the eleven cases the whole shaft became enlarged, but has never given any discomfort.

With these results in view is it pertinent to ask, whether amputation is ever indicated in coxitis?

Discussion opened by Dr. Ridlon, of Chicago, who said that unquestionably in the majority of cases, the disease began outside the joint, in the bone and the difficulty of locating the focus of the trouble, raised the question as to whether it was best to operate or await the results of local treatment. Of course, if the patient is growing worse, operation is indicated, but otherwise, unless we can be sure we can remove all the diseased tissue and cure the case without relapse, within the time in which wounds usually heal, it is a question whether the operation should be done and the chances taken of septic infection through the sinuses leading into the joint or into the surrounding healthy tissue. His prejudices were against operating unless as a life saving measure.

Dr. Andrews, of Chicago, thought that in a large proportion of cases, after suppuration has commenced excision will be the best way out of the difficulty, though this may not be absolutely necessary to life, as has been shown by cases that have done well without excision. Such cases, however, recover more quickly after operation. Before the age of puberty there is very little danger from shock. He favored increased employment of operative procedures, but there are exceptions to all rules.

Dr. Mynter ascribed his excellent results to the great care with which he removed every portion of the diseased tissue, and also the fact that he did not try to get primary union and did not want it as he believed the wound did better if packed with iodoform gauze and allowed to granulate, as strong fibrous tissue then was formed and flail-joints avoided.

THE CREMASTERIC REFLEX IN VARICOCELE.

Read before the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June, 1892.

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I wish in this paper to make a short mention of certain observations and theories which I am not yet prepared to publish in full.

The accepted theory in regard to the causation and pathology of varicocele had never been entirely satisfactory to the profession. While it may be admitted that certain anatomical relations more especially of veins on the left side of the body may predispose to the disease, and while there can be no doubt of the occasional agency of injuries and venereal excesses in producing it, we must nevertheless acknowledge our ignorance of the exact pathological processes which lead to its development. We cannot explain why of two men of apparently similar constitution and habits of life one should suffer from the disease and the other escape. We may accept as the truth, the statement that the size, winding course and numerous anastomoses of the veins near the testis, their lack of support by the loose and inelastic tissues which surround them; the length and small size of their efferent trunks, the perpendicular course of the left spermatic vein and its right angled junction with the renal and its position under the sigmoid flexure render these veins especially liable to over distention and resulting disease. We may also agree that general debility, sprains, violent muscular exertion and excess of venereal excitement, conduce to the production of varicocele, and yet we have still to account for the fact that multitudes of men whose anatomical formation is precisely similar and who are subjected to the influence of all of these so-called causes, go through life nevertheless untouched by the disease. In other words, the alleged causes of varicocele do not in most people, produce varicocele, and unless we are willing to rest satisfied with the vague and unmeaning word "predisposition," we must confess that the essential factor has, as yet, escaped recognition. While we may admit that the particular conditions enumerated above, may influence though not in themselves determine the production of varicocele, there are other alleged causes which must be denied as not proven. Thus the often quoted absence of valves in the spermatic veins, is said by Curling, never to occur. He invariably found the valves to be present even though useless from over distention and enlargement of the veins. Whether the spermatic veins could be rendered varicose through the agency of muscular contraction or by the presence of hernia, tumors, trusses, abdominal belts, and the like must be regarded as more than doubtful.

It has seemed to me that certain pathological influences which affect the circulation of the blood through the spermatic veins have been too little studied in this connection. If we examine the theories which have been promulgated in respect to this disorder, it will be found that certain factors in the local circulation have apparently been altogether overlooked, although they have a most important bearing on the subject. If we omit all considerations of those factors of the circulation of the venous blood, which are common to the whole system, such as the action of the heart and diaphragm, atmospheric pressure and the like, we may say that the local venus circulation is furthered by three agencies: 1. The contractian of the venous walls. 2. The action of the nervous system, and 3. The intermitting pressure exerted on the spermatic vein by the contraction of the muscles which surround them, or are in their immediate vicinity.

In the walls of veins, like those of arteries, there are both longitudinal and circular muscular fibres and elastic tissues. These permit the veins to dilate under the pressure of the column of blood and to contract again, forcing the blood onwards. As long as the venous walls retain their tenacity, their contraction will form a most important element in the propulsion of the contained blood. On the other hand, any inherent or acquired defect in their mechanism, would of necessity, seriously impair the local circulation and lead, in itself, to the permanent and incurable distension of the venous walls. There can, in my opinion, be no doubt that many cases of varicocele are due to this cause. Local injuries, such as contusions and sprains may be presumed to act in this way by rendering the veins themselves incapable of performing their duty in forcing their contents on toward the heart. These are the cases in which the ligature by obliterating the vessels altogether, and compelling the blood to seek other and healthier channels, is most effeetive. The morbid area is here comparatively small, and if other more general causes of trouble are wanting, the operation is effective in causing a radical cure. In another class of cases, however, in which the seat of trouble is also in the venous walls, a cure is vastly more difficult and often impossible. In this class, a very small one, there is a general disposition to varices. The entire venous system would appear to be inherently defective, and the youth, affected in this way, will show early a tendency to dilatation of many veins. The veins of the scrotum, of the rectum, of the legs, and even of the arms will become thin and swollen. I have seen one or two cases of this kind and regard them as practically incurable, for you may obliterate the veins and cut off the scrotum, or do what you will, and the disease will tend to recur. It is remarkable, however, that when this tendency is acquired, later in life, as when old people become affected with varicosities caused by general vascular degenerations the spermatic veins generally escape, even though the the scrotal veins become enlarged. At least this is my experience in such cases.

It is uncertain in how great a proportion of cases the ætiology of the disorder must be sought for in primary disease of the venous walls. The disease is found only rarely associated with a general disposition to varices. "Landouz" found only one person in fifteen affected by varicocele who had also varicose veins of the legs, and of twenty other persons who had varicose veins of the legs, not one had varicocele, neither was he able to trace any connection between varicocele and hæmorrhoids. "Curling" confirms this statement from his own experience.

I have spoken of intermitting muscular pressure as a chief factor in the local circulation of the blood in the veins, and wish to emphasize its importance for the reason that it seems to have been lost sight of in the study of morbid conditions under consideration. The assistance given to the general venous circulation by the contraction of the muscles which are immediately adjacent to the veins is well understood. But the fact that the spermatic veins, are peculiarly dependent on muscular pressure for their support has seemed to have escaped observation. My own studies of this subject have led me to the conviction that every man would have a varicocele were it not for the action of certain muscles which continually urge the blood onward, and prevent undue distension of the spermatic veins. These muscles are, first, the cremaster; second, those of the abdominal walls, and third, the tunica dartos of the scrotum. Of these the cremaster is the most important, and it is very clear that its main function has been overlooked by anatomists and physiologists, who ascribe to it only one function, that of raising the testis. A mere superficial study of these muscular fibres, however, show that they afford a most powerful brace and support to the spermatic veins, and *assist, by their* contraction, most materially, in the circulation of the blood through those channels.

The cremaster muscle consists of a series of muscular and elastic fibres which seem to be a continuation of *the internal oblique.* They arise from Pouparts ligament, pass in a series of loops of various lengths, over and partly around the spermatic cord, and are attached to the pubic bone. The lowermost loops are fastened at the middle, to the testis. In a few instances loops have been found to surround the cord, but this is not common, although in all men they are so fastened to the sheath of the cord, that their contraction serves the purpose of a constrictor of the cord and its vessels. In some persons they are large, and in others small, and in a few, entirely wanting. They are usually most developed in strong, muscular men. They are connected together and to the areolar tissue of the cord by the cremasteric fascia, and their contractions draw taut the sheath of the cord, elevate the testicle and compress the spermatic veins. These contractions take place readily on any sudden irritation of the inside of the thigh and thus constitute the so-called cremasteric reflex, but they also occur from internal causes and irritations. Their action is assisted to some extent by the contraction of the tunica dartos, which shortens and corrugates the scrotum. The cremaster cannot contract without squeezing the blood out of the veins inclosed between its fibres in front and the inelastic tissue behind, which surrounds the spermatic cord, and which is firmly bound to the overlying muscular fibres. Caught between these opposing forces, the veins become emptied of their blood, to fill again the moment the contraction ceases. Now, this is the true and only important function of the cremaster. The testicle, by its weight, serves as a point of resistance, which enables the muscles to contract more firmly, and it is of course, raised whenever that muscle acts, but its elevation is only an incident in the exercise of the more important duty, which devolves upon the cremaster, that of propelling the venous blood upwards, and relieving, for a moment, the over-distended veins.

The force, which it exerts, acts from below, upwards, and the stimulus which produces its frequent and voluntary contraction, proceeds probably from the irritation excited in the veins by their over-distension. However, that may be, I do not doubt that the external support, which the muscle yields, is essential to the health of the venous walls and whenever it is wanting, especially in youth, whether from defect in the muscle itself or paralysis of the nerves which supply it, that condition is liable to develop which is termed varicocele. In more advanced life, the walls of the veins become firmer and less yielding and they can better withstand the loss of external support, for it is a curious fact, as I have already said, that these venous degenerations which occur in advanced life, and produce hæmorrhoids and varices of the lower extremities, rarely affect the veins in the cord, although not uncommon in the more superficial veins of the scrotum.

In the inguinal canal, the veins are exposed to the pressure of the ever-contracting abdominal muscles. Here again they receive an invaluable assistance in enabling them to perform their functions. The operation of this intermitting pressure is precisely that which occurs below when the cremaster contracts. During a muscular contraction, which narrows the inguinal canal the blood is forced from the contained veins in the direction of the least resistance, which is upward and inward. On the occurrence of muscular relaxation, they become again distended with blood, and the constant repetition of these movements, make a most important and indeed most essential factor in the venous circulation.

It is curious that this very muscular contraction of the abdominal muscles around the inguinal canal has been enumerated as a cause of varicocele, whereas it is doubtless if the circulation of the blood through the spermatic veins could take place without it, and yet it is very possible that the violent and spasmodic contraction of muscles may cause varicocele in this way. A vigorous young man engages in some struggle, such as wrestling or rowing, in which he puts forth all his power in one grand effort. The abdominal muscles contract with great force upon the structures in the inguinal canal and for the moment close entirely the spermatic veins, at the same time the blood is conveyed through the arteries in unusual quantity, and the veins below the inguinal ring become turgid and swollen. If now the cremaster is largely developed, and if at this very moment, it, in common with with other muscles, is put into a violent and almost tetanic contraction, the distended veins caught between the opposing muscles, with no outlet for the contained blood, either burst or stretch beyond the power of recovery.

In the one case, there will result an hæmatocele, and in the other a varicocele. It is probably in this way that these cases of varicocele occur, which are attributed to strain. The very vigor of the cremaster would here coöperate in producing a condition which is ordinarily the effect of cremasteric weakness.

As regards the third group of muscles, which aid the venous flow in the spermatic vessel, the muscular fibre of the tunica dartos, their action is comparatively weak and unimportant. They serve to make the individual more comfortable by holding up the scrotum and materially assist in the superficial circulation through the scrotal veins, but are not strong enough alone either to support the testis or the deeper veins which carry off the blood.

If now we ask how we can apply these pathological conditions to the study of varicocele, we may conclude that of these muscular groups, the abdominal muscles, whatever their condition as regards size, are ordinarily strong enough and act constantly enough to produce the intermitting pressure which is necessary to force the blood upward after it once enters the inguinal canal, while the tunica dartos is too weak in itself to make much difference in the circulation of the deeper veins. With some exceptions the cremaster alone is concerned in the pathology of such cases of varicocele as arise from insufficient muscular support. This muscle varies exceedingly in different men; in some it would seem to be nearly absent, and in these, from very childhood the testes hang low and the varicocele begins early, and in many cases on both sides. As soon as the sexual excitement of puberty begins, the veins begin to swell and the boy of fifteen or sixteen is already forced to wear a suspensory bandage. If the whole muscle is extremely defective, the cremasteric reflex may be altogether wanting. If only partly developed, we may believe that its defect will produce symptoms which would vary with the loops involved in the defect. Thus, if the long loops which descend upon the testes are present in sufficient volume, but the shorter loops which hug the cord are absent or very weak, the cremasteric reflex might be present in considerable degree and yet a varicocele develop in the veins from want of muscular support, while on the contrary, the presence of the shorter loops might prevent venous disease, even though the testicle itself dragged upon the cord, though the absence of the longer loops which should be attached to the organ and lift it up. There is hardly any anomaly of development which one could think of in regard to this muscle which might not be present, and producing peculiar conditions. The presence of the cremastic reflex therefore would not necessarily indicate the existence of an adequate support to the spermatic vein nor its absence indicate that that support was altogether wanting. Neither would the absence of the cremasteric reflex and the development of a varicocele necessarily prove that the disorder arose from a congenital deficiency in this muscle, for an acquired paralysis would effect the same result.

I am inclined to think those cases of varicocele which are ascribed to excessive sexual excitement may be due to a paresis of the nerve which supplies the cremaster. I have never met with such cases myself but find recorded in practice. One physician told me he had seen four cases which developed in young men immediately after entering upon engagements to marry, presumably due to prolonged ungratified sexual desire. Whether in such cases, there may be any inherent weakness of the nerves or the muscle itself, must be uncertain, but that sexual excitement alone could not produce the disorder, is sufficiently demonstrated by the experience of the vast majority of men.

Varicocele will make its appearance sometimes in connection with obscure trouble of the nervous system. Dr. Imrie kindly sent a young man of sixteen years to me, with a varicocele of the left side, of some three months' duration. A Jew, he had been circumcised in childhood, both testes hung equally low, and as far as the cord would allow. The cremasteric reflex on the right side could be elicited with difficulty and on the left not at all. There was a double varicocele most developed, however, on the left side. The knee reflexes were also wanting and he had suffered for three months from incontinence of urine. I saw the case but twice and was therefore not able to study it as I could wish, but it was evident that there was here a paralysis, possibly of spinal origin associated with and probably causative of varicocele. It is possible that reflex irritations like those produced by narrow foreskins or by intestinal worms, may produce the same result. As showing the connection between affections of the cremaster and those of the testes and cord, I may here mention a case now under my treatment of neuralgia of the testis in a man 46 years of age: it began a year ago without apparent cause, in the left testis and of late has occasionally affected the right; the testis is quite tender and sore, though to the touch not perceptibly altered from the normal. The pains which are nearly continous are chiefly in the testis and cord but sometimes affect the small of the back. I suspected some spinal sclerosis but could not verify that hypothesis, as his knee reflexes were normal and he had no other symptoms. His urine contained nothing abnormal. Now, he had this peculiarity; he had been able to control his powerful cremasters perfectly and jerk his testicles up at will with great power; he did this in my presence, on the right side and I was astonished at the vigor of the contraction. On the left side, however, the ability to raise the testis had failed him and he could produce a contraction of the left cremaster only by moving the two together. Then the contraction of the right muscle had nearly ceased, one could see an imperfect movement of the left. The cremasteric reflex on the right side was prompt and strong; that on the left could not be elicited at all. I fancied that the left veins were slightly swollen and have no doubt that had he been twenty instead of nearly fifty, he would soon have developed a varicocele.

While there are not a few varicocele in which the cremasteric reflex is nearly or quite normal, in the majority of cases, patients show a decided disturbance in the mechanism which produce it.

In how many cases this is due to congenital effects of the cremaster and how many to paralytic conditions, or acquired weakness, I am unable to determine from my inability to complete my observations by the necessary dissections.

It is not easy to obtain autopsies in persons subject to varicocle and I have failed in my efforts in that direction. In operating however, on a living subject for varicocele, I have noticed carefully the conditions of the cord and its coverings and have rarely found a well developed and powerful cremaster, in marked contrast with cases of scrotal hernia, in which the fibres of the cremaster are often enormously hypertrophied.

It is interesting in this connection to study the relations of hernia to varicocele, and more especially as my observations have led me to take issue with some authorities, who have ascribed to hernia the power of producing varicocele by pressure on the efferent veins of the testis.

I can recall only two cases from my practice in which hernia was associated with undue enlargement of the spermatic veins. They were both cases of small hernia in young men of weak muscular fibre, and in both there could be no pressure on the efferent veins by the easily reduced, small protrusions sufficient to cause venous disturbance. It was evident that both disorders were induced by the same muscular insufficiency.

On the other hand, in operating on very large irreducible scrotal hernia, I have had occasion to remark as have many surgeons, the great size and large number of the veins around the hernia. I have never regarded these enlarged veins as at all allied in pathology to varicocele. In the first place, the veins in the testes proper rarely are very much larger than common. The hypertrophy, for I consider it such rather than a varicosity, affects principally the veins of the covering of the testes, those which carry back the blood of the cremasteric and pudic arteries, and while the veins are very large and numerous, they are not more so than is necessary for the nutritive processes of these enormous protrusions and the hypertrophied tissue, which surrounds them. Such patients have none of the subjective symptoms of varicocele, their testes are not atrophied, and I have no doubt that the cure of the rupture, if it were possible, as it rarely is, would be followed by the gradual recurrence of the veins to their normal condition. On the other hand, hernia and varicocele are both so common as disconnected disorders and are so rarely found present in the same individual as coincident disorders that one is almost forced to conclude that there is some antagonism, so to speak, between the two. I believe that this is the case and that the reason of it is to be found in the processes which take place in the development of the testes. According to Curling, the gubernaculum testis exists from an early period of fœtal life as a soft cord of connective and muscular tissue which extends from the lower-most point of the testis by three divisions to the inside of

Pouparts ligament to the os pubis and to the bottom of the scrotum. He belives that the testis is guided into the inguinal canal by that part which is attached to Pouparts ligament, is pulled through the canal by the pubic portion and is finally drawn into the scrotum by the scrotal portion. In its passage through the inguinal canal, some fibres are detached from the internal oblique muscle and form the loop which lies over the front and sometimes around the cord. It is these loops especially which give support to the veins, and aid in the propulsion of venous blood through them, and a moment's consideration will show that if this description of the process is correct, the strength of the walls of the inguinal canal will be inversely to that of the cremaster. If there are only a few fibres detached from the internal oblique the inguinal wall will be stronger, if many are carried down it would, of necessity, be weaker. But strong walls mean less danger from hernia, while a large cremaster means freedom from the liability to varicocele. It is easy to suppose, therefore, that such individuals as are liable to inguinal hernia are less liable to varicocele and vice versa. At the same time, it would not exclude the possibility of both diseases occurring in the same individual, if he were a man generally deficient in muscular development. I have been much disposed to doubt all these theories which refer the development of varicocele to pressure of any kind.

The effects of pressure are ordinarilly felt only when pressure is long continued and the disease which arise from pressure,therefore commonly occur in middle or old age,and we see this exemplified in hæmorrhoids and varices of the legs,which, though not unknown in young persons, are far more common in the aged,but it is notorious that varicocele is a disease of youth and makes its appearance at an age when hæmorrhoids and varicose veins are rare indeed. The pressure of the sigmoid flexure on the left spermatic vein, which is one of the alleged causes of varicocele, must be vastly greater when the gut is filled with long standing accumulations of fæces, such as occur in cancers and strictures of the rectum than in the occasional constipations of youth, and yet, whoever knew a varicocele to arise from that cause. The constipations of middle aged and old men cause hæmorrhoids,but almost never varicoceles. This has been with me so uniform an experience, that I am disposed to conclude that theories which refer varicoceles to such causes are due to imperfect observations.

It is, indeed, a question whether the pressure of the bowels on the spermatic veins would not act rather beneficial than detrimental to the circulation of the blood through them. In the first place, they conduct the intermitting pressure of the abdominal muscles through to the veins, and this must be as we have seen, a great aid, and in the second place, they themselves would subject these vessels to an intermitting pressure, as gas and fæces pass through the gut in ever varying quantities. Only in conditions of chronic, irremediable constipation, conditions uncommon in young men, could a bowel exert that dead, unyielding pressure on a vein which would cause distension of its distal portion. That the left spermatic vein is ever subjected to that kind of pressure, even when the sigmoid flexure is loaded with impacted fæces is a question of great doubt. That the left vein is more frequently affected with varicocele than the right would seem to me to be the result rather of general than of local condition. The whole left side of most men is weaker than the right. The left foot is smaller. The left muscles are weaker. It is possible that the left cremaster, under this same law is in the vast majority of persons, much weaker than the right, and that the left testis hangs lower for the same reason. It is possible, too, that the walls of the veins themselves on the left side may be weaker and less developed, and the vessels of the left side may be weaker and less developed than the vessels of the other side of the body.

To conclude with the summary of this paper, I should say:

1. That the pathology of varicocele is variable, cases differing from one another both as regards causes and pathological conditions.

2. In one group of cases, the fault lies in the walls of the veins which have become weakened either by injury or from congenital or acquired disease. In this group, the cremasteric reflex may be altogether normal.

3. In another class of cases, the primary diseases involve either the cremaster or the nervous mechanism by which it is controlled. The muscles may be congenitally defective in volume or abnormal in position, or it may be entirely wanting, or, on the other hand, it may be either temporarily or permanently paralzed. Whatever the nature of the original affection, these cases are marked by deficiency in the cremasteric reflex, which, in some cases may be altogether wanting, and in others, very weak and uncertain. As the greater proportion of varicocele shows this symptom,it is fair to conclude that the majority of varicoceles are due to affections of the cremaster. It is important that the whole subject should be studied anew, in the light of pathological anatomy, and it will be well for those who are so fortunate as to secure autopsies in persons so afflicted to bear the matter in mind.

Dr. Mynter, of Buffalo, asked whether the knowledge that the cremaster muscle may influence the production of varicocele would have any bearing on the treatment.

Dr. McGraw replied that if we considered the varicocele due to paralysis of the cremaster muscle, electricity might be used, but when the cremaster is wholly absent removal of the scrotum is the best treatment, though this support cannot make up altogether for the intermittent support of the cremaster muscle.

Dr. De Garmo, of New York, said he could confirm two points. He had very carefully watched the effect of pressure as a cause of varicocele and had seen many cases with hernia, but did not think it had anything to do with the production of the former even where bad trusses were worn. He did not recall any case coming on late in life and had never seen a case from strain. In considering the relation of hernia to varicocele he reported a case which he had had under treatment for two years for hernia. It was operated on by another gentleman for varicocele and the hernia was cured. With regard to operation he had used the plan of passing a silk thread round the veins and tying them off. He had had excellent results, no accidents, and no recurrence.

Dr. McGraw concluded by saying, that as his paper had reference only to the pathology, he refrained from saying anything about the treatment.

THE OFFICERS of the Association of American Physicians for the ensuing year are as follows: Alfred L. Loomis, New York, President; R. H. Fitch, Boston, vice-President; I. Minis Hays, Philadelphia, Recorder; Henry Hun, Albany, N. Y., Secretary; W. W. Johnson, Washington, D. C., Treasurer.

THE MANAGEMENT OF GANGRENOUS HERNIA, WITH REPORT OF A CASE.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JOSEPH RANSOHOFF, M.D.,
OF CINCINNATI, O.

Nothing more clearly demonstrates the evolution of surgical thought and practice than a comparison of the questions deemed of prime importance in relation to strangulated hernia at the extremes of two decades.

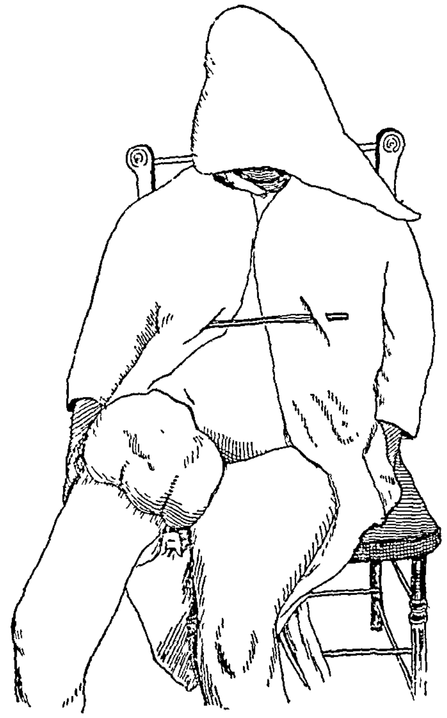
Prior to 1870, the question to be answered in every case was "Is the sac to be opened, or not." At the present, a condition is hardly to be conceived in which the operator would refrain from opening the peritoneal tunic, thoroughly inspecting the hernial contents and wherever feasible supplementing the relief with the radical operation.

Taxis, which then played so prominent a rôle in all cases has been accorded a more and more subordinate position, as its dangers ever increasing with the age of the strangulation were more fully appreciated, and in proportion as surgery sought the light for its manipulations in large and open wounds. Then, the teachings of the German and English schools regarding gangrenous hernia prevailed. The oft-encountered sloughing gut was incised and permitted to drain as an abscess. Now the really vital lesson of kelotomy, that in its early performance lies its safety, has been widely learned. Therefore gangrenous hernias are becoming relatively less frequent. Of 27 cases which have come under my observation, only 4 were gangrenous. Three times have I seen gangrene of the intestine; once of the mesentery alone. In one of the former, the strangulation had existed less than 24 hours. Of 170 kelotomies for strangulation in Hagedorn's Clinic[1] (*Z. f. Chir.*, 32, p. 356) gangrene, real or suspected was encountered but 25 times. In Gottingen Konig[2] had 49 strangulations in 5 years, gangrene being present in 8. Of 61 cases occurring over a period of 12 years in Czerny's[3] Clinic 15 were gangrenous. Of 94 cases operated on in the Mass. General Hospital[4] 7 were gangrenous and 2 doubtful. F. A. Southern of the Manchester Royal Infirmary reports 85 cases of hernia and among them 9 of gangrene. Thus of 486 cases occurring within about twenty years only 68 or about 14% were gangrenous or doubtful cases. Clearly therefore the experience with this condition of any one man, unless disposing over an unusual clinical material, must be limited. It is therefore by cumulative evidence that the proper management of this most fatal complication of hernia must be evolved. In this belief I venture on the report of the following cases:

Case 1.—Walter P. aet. 29, farmer, Carlisle, Ky. Rupture of several years standing. Truss worn, but irregularly. While at work strangulation appeared on the first of August, 1889. Continued work for some time and attempted reduction. After 48 hours Dr. Tilton was summoned but taxis failed. The necessity for an immediate operation was urged but it was declined. I saw the patient on the night of the fifth day. Abdominal distension marked. Obstipation; vomiting frequent but not feculent. Pain severe about umbilicus. Great restlessness. Temperature 102°, pulse 100 and full. Scrotal hernia size of fœtal head; hard and without impulse on coughing. Skin red and œdematous. Operation by lamplight. In the hernial sac was fully a half pint of foul-smelling bloody serum. Omental mass as large as a fist, of dark brown color, putrid and friable; no adhesions to sac. (The latter was a dusky blue in color.) There was no intestine in the hernia. After carefully cleansing the sac and its contents and covering the protruded omentum in gauze, the constriction at the internal ring was divided. The omentum was easily drawn into the wound, after severing some slight adhesions. It was ligated and returned to the abdominal cavity. Thorough intra-abdominal drainage through the wound was provided for. Death 24 hours post-operation from peritonitis. An autopsy was not made.

Case 2.—Mrs. M. aet. 69. Hernia of 15 (?) years standing. Has frequently had symptoms of fecal impaction. After a supposed attack of this kind had lasted three days, Dr. J. Marcus was summoned. I saw the patient in the evening of the fourth. There had been fecal vomiting for two days. Aside from a decided dyspnœa from which the patient suffered at all times the general condition was not good. There was no elevation of temperature. Pulse irregular.

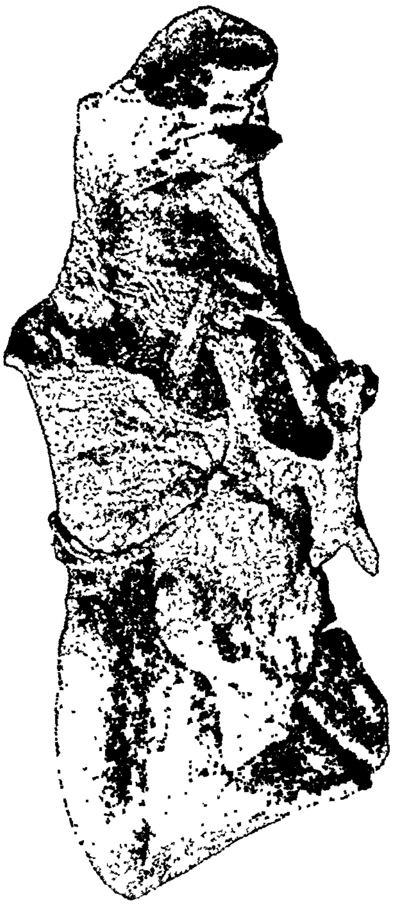
The appended illustration displays the woman's femoral hernia. Large and lobulated it covered the entire upper and lower part of the thigh. Transverse measurement, 11 inches; longitudinal, 7 inches. The greater portion of the hernia was soft. In its depths there was an indefinitely outlined mass which was painful on pressure. Believing the case to be one of impaction within the sac and recognizing the gravity of an operation under the conditions present, the patient was anaesthetized with a view to operation if taxis moderately used did not overcome the difficulty. That I did not operate at once was a fatal error. With very little force gurgling was elicited and the mass before mentioned seemed to have subsided. After coming out from the narcosis, the patient's condition was found to be unrelieved. When I saw her the next day, she was moribund. Exit lethal 16 hours, post-operation.



Autopsy.—On opening the sac it was found to be multilocular. The many diverticula evidently resulting from the lesser resistance of the meshes between the denser fibers of the cribriform fascia. The coils of intestine were for the most part as freely movable as in the abdomen. In one of the saccules an obstruction was found. It was produced by a band as large as a quill. It sprang by a broad base from the free border of a coil of intestine and was attached to the under surface of the mesentery of the same coil. In the loop thus formed a second coil had become entangled. Above and below the constriction-furrow the bowel was normal. In the constriction groove itself a localized gangrene or rather pressure necrosis had led to a perforation. The aperture is about one-sixth of an inch in diameter; and on the free border of the intestine. There is no fecal extravasation.

The band springs from the ilium about 14 inches from the ileo-cæcal valve. It presents a central cavity which tapers off towards its mesenteric attachment. The character and position of the band make it certain that it is a Meckel's diverticulum. Though often producing intestinal acute obstruction in the belly cavity, I have not been able to find the record of a case where it had given rise to obstruction in a hernia. In this regard the case presented is unique.

Case 3.—Miss D., æt. 30. Seen with Dr. Jenkins, Newport. No previous history of rupture. While lifting a mattress felt something give way in the groin, four days before operation. Was seen by Dr. Jenkins on third day when taxis was attempted. Then vomiting became severe and abdominal pain intolerable. An operation was permitted. Hernia large as a walnut. No impulse on coughing, not very tender. Absolute obstruction since inception. Abdomen not distended. General condition very good. On opening the sac several ounces of bloody serum escaped. There presented itself a knuckle of small intestine apparently of the ileum about four inches long, of bluish color and moderate distension. The serous covering was glistening.



Gangrenous Hernia. Constriction by Meckel's Diverticulum.

In the center of the coil opposite to its mesenteric attachment, there was a black gangrenous patch large as a silver quarter and circular in outline. After carefully cleansing the sac wall and intestine, the constriction at Gimbernat's ligament was divided and then brought into the wound. Although the constriction furrow was unusually deep there was no evidence of present or probable necrosis. The afferent bowel was considerably larger than the efferent coil but presented a healthy appearance. Indeed during the few moments that the hernial contents were being studied with a view to definite action the circulation returned to all of the gut save the gangrenous patch alluded to. It was finally determined to return the entire intestine to the abdominal cavity retaining by two catgut sutures passed through mesentery and wound margins, the gangrenous surface in absolute relation to the floor of the wound. The latter was lightly packed with gauze, and a sterilized dressing applied over all. The vomiting continued for several hours. Ten hours after the operation the patient had several large and watery evacuations. On the fifth day perforation of the intestine ensued and during two weeks the large portion of the intestinal contents discharged through the fistula. Without other treatment than compression the aperture gradually contracted and in a little over a month had entirely closed. The process of sloughing was unattended by either local or general reaction. The patient has since remained well.

Case 4.—Mrs. K. Seen with Dr. Harff. Patient, æt. 56, was for many years the subject of an irreducible inguinal-labial hernia of the right side. Has repeatedly suffered from incarceration. Once reduction was accomplished under anæsthesia. While at work on Friday morning, she experienced a sudden and excruciating pain in the hernial protrusion and suffered immediately from nausea and vomiting. Saw the patient twelve hours after first symptoms supervened.

The hernial protrusion, large as a cocoanut, was soft and resonant throughout. Impulse on coughing plainly perceptible in many parts of the mass. From the base of the hernia projecting towards its surface a coil of intestine could easily be outlined and palpated. It was dense, hard and persisting; like a link of tightly packed sausage in shape and to the touch. Diagnosis strangulation by band; gangrene probable notwithstanding the excellent general condition of the patient. It was nearly midnight when I saw the patient, and necessary assistance was not at hand. The operation was therefore deferred until morning. During the intervening ten hours very extensive effusion into the sac had taken place. The constricted coil could no longer be clearly outlined.

Incision ten inches long in axis of tumor. On opening the sac some half dozen pouches connecting with it were exposed and in them were coils of bowel and adherent omentum. The sac presented the usual appearance of an old irreducible hernia. In one of the compartments near the greatly enlarged ring a loop of the bowel had become fixed by a band. The sac, separated from the general cavity, when opened discharged six or eight ounces of a foul bloody serum. Within it was a coil of gangrenous bowel. Completely sequestering with gauze the infected area, the constricting band was divided and the sloughing gut brought into the wound for inspection. Along the line of constriction a deep groove had been formed but there was no necrosis. The coil itself was of a dark chocolate color and lusterless. Under its surface, which presented few abrasions, were many hæmorrhagic extravasations, chiefly near the border. Perforation had not taken place. Above and below the constriction groove the intestine seemed normal.

The patient's general condition warranting the procedure, primary resection was determined on. Having thoroughly protected the wound, and brought the intestine well down, a gauze cravat was lightly drawn through mesentery an inch above and below the constriction groove. Excision followed, the mesentery being divided a short distance from the gut and parallel to it. Hæmorrhage from the mesentery was free, but no ligatures were required. As the mesenteric wound was brought together by a continuous silk suture beginning at its centre and including its entire thickness, the bleeding points were included within it. When completed the mesenteric suture line measured about four inches. As this suture progressed, the intestinal ends naturally approached each other. No clamp was used, the fingers of an assistant answered admirably. The ends were of uniform diameter. For suturing fine silk and an ordinary cambric needle was used. The suture employed was the continuous Lembert. Particular care was taken at the mesenteric attachment. When completed the suture appeared weak at two points. These were fortified by additional sutures. The sutured bowel was returned to its sac, the wound thoroughly irrigated and closed except for gauze drainage at its most dependent portion. Time of operation fifty minutes. Length of gut removed fourteen inches. Union primary, and recovery uninterrupted; nineteen months have passed since the operation. The patient continues well.

The first case presented is of interest in that the omentum is rarely involved in the sloughing process of a gangrenous hernia. B. Schmidt [6] questions altogether the existence of primary strangulation of the omentum. Of Nagedoms 170 cases, gangrenous omentum was only once the sole occupant of the sac.[7] I have found reports of two other cases, one from Heidelberg; [8], the other of W. H. Bennet [9] of St. Georges Hospital. The safety of the omentum from gangrene is readily found in the ease with which it forms adhesions to the sac wall through which it then receives its nutrition. The case first reported appears to me to put a quietus on the theory long advocated and recently again promoted by Banks, namely that the constriction ring should not be divided in most cases of gangrenous hernia on the ground that it is a bar to the development of general peritonitis. By the constriction the septic products of the hernia may be isolated for a time. But peritonitis develops from within. In the case presented there was no communication between the sac and the general belly cavity. But just within the neck was the large gut fixed by the adherent omentum, and its wall rendered paretic though traction was unable to resist the passage through it of the organisms which fatally infected the peritoneum. Fortunately there can be but one opinion as to the management of gangrenous omentum. Excision after ligation in healthy tissue, and return to the peritoneal cavity will generally end in recovery unless peritonitis already exists. The three cases quoted all recovered, although in each the medical operation followed that for strangulation. The wisdom of this procedure in all cases might be seriously questioned. In severe cases where peritonitis already exists or is threatened, the last step might advisedly be refrained from and thorough drainage secured. At all events capillary drainage through gauze can never be harmful. It may be relied upon to forestall the development of a peritonitis and where the process already established is yet local, evert a fatal issue.

When gangrene involves the intestine the solution of the problem is far less easy. Since Ramdohr first successfully resected the gut for hernia in 1727, the possible success of primary excision has been conceded. Of recoveries there have been many. But the measure however ideal has never gained firm footing among surgical procedures. This in face of the fact that the results from the alternative measure, that of the formation of an artificial anus, have been most deplorable. Recently Poulsen reports 29 [10] cases with but 4 recoveries. Of thirty-five cases so treated at St. Bartholomews, 4 were saved. (*Brit. Med. Jour.*, 1891, I., p. 701.) Certain is it that all cases should not be treated alike and that every case ought to be considered with reference, first to the condition of the intestine and its environments and second the probable ability of the patient to bear the shock of a prolonged operation.

In three of the cases presented many of the changes except those of the afferent portion of the bowel were found. For a strangulation affects the gut either along the line of constriction; at some or all points of the coil involved or in the course of the intestine for a varying distance above the point of constriction. Where the constricting band binds the gut, a well marked groove is made by direct pressure. The constriction tight enough to occlude the calibre of the bowel may not interfere with its vascular supply. If gangrene results it will be from pressure at the bottom of the groove and limited in extent. Except for the usually small ulcer in the constriction groove, the gut above and below may be normal in appearance. In the fruitless efforts of nature to protect the general peritoneum, adhesions are quickly formed between bowel and neck of sac. In the attempt to sever these the fragile wall of the bowel tears along the line of constriction. Doubtless many cases of this kind occur, the fecal outpour taking place at the time of operation. To avoid this it might be wise to follow the practice of Mikulicz [11] who in every case of suspected gangrene opens the ring from within the belly cavity, thus making a laparo-kelotomy which permits as he thinks thorough isolation by gauze of the infected area. The difficulty appears in the fact that pressure gangrene limited to the furrow and made by the constricting band is not always easily recognized. Fortunately the tissues about it whether torn by manipulation or not are in a fair condition for partial excision and lateral suture, by which the patient may be saved the perils and annoyance of an artificial anus. Krumm reports such a case successfully treated and Barette three of pressure gangrene successfully managed in the same manner.

The deleterious effects of strangulation are not equally visited on all parts of the coil. In some cases, as in the fourth presented, the entire knuckle is [illegible] dull-chocolate or grayish color, with or without [illegible] hæmorrhages. It is soft, friable, gangrenous throughout. In others as in the second the force of the strangulation, although influencing the circulation of the whole, appears to effect most seriously the central part of the knuckle and at a point removed farthest from the mesentery. It is clear that if in such a case excision were to be done it could only be beyond the limits of constriction. The cyanotic gut about the really gangrenous centre would ill support a suture. Let alone, it will recover. The handling incident to suture might easily prevent it. Furthermore, in cases of this nature the gangrene is often more extensive than is apparent. Beginning generally in the mucosa, the serous tissue is the last and therefore least affected. The fixation of the gangrenous area in the bottom of the wound, relying on nature to make the anus preternaturalis appears to me sound in judgment. The data on which this view is based differ from those which militate against the formation of a fecal fistula when the gut is gangrenous in its entirety.

First and foremost the calibre of the gut remains patent and death from inanition is rendered impossible. Again the artificial anus which results will probably be small and close in a few weeks or months without operative interference. Where the gangrenous area is surrounded by healthy tissue and sufficiently small it may be excised and closed as would be a gun shot wound, or it may be united as suggested by Lindner [12] and closed by sutures holding the contiguous parts together in horizontal fold. Of the former practice and lateral suture Barette [13] reports 24 cases with 21 recoveries. Sachs [14] reports a case similarly treated with success.

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(*To be concluded next week.*)

INTERNATIONAL DERMATOLOGICAL CONGRESS.—The second Dermatological Congress will be held in Vienna from September 5 to 10, 1892.

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SATURDAY, AUGUST 13, 1892.

DISEASE AND CRIME DUE TO HOT WEATHER.

It is a well known fact that petty crime particularly against persons, follows the rise and fall of the temperature with startling uniformity. The late heated term has illustrated this fact in every city and town of the country.

Wherever spirits are sold most of the offenders were intoxicated, or more literally made delirious by the poison of alcohol. Persons accustomed to use spirits are more susceptible to the narcotic effects of alcohol at this time, and manifest unusual irritability and want of judgment. Persons who are not alcohol drinkers exhibit equally strange mental symptoms. This year the number of heat prostrations and sudden alarming exhaustions incident to this condition have been greatly in excess. Transient delusions, severe neuralgias and digestive disturbances have been common. The influence of the late epidemic, influenza, has been traced in many cases. One physician reports that in ten cases of heat prostration, eight were traceable to the effects of influenza, which prevailed from one to six months ago. This sustains the observation of others, that nearly all cases of influenza leave a susceptibility and predisposition to take on diseased conditions from the slightest exposure. The effect of extreme heat is generally understood to favor the formation of poisonous products in the body, and require extreme perspiratory activity in the process of elimination. If the skin and glandular system are defective and do not respond to the demands for increased activity, these products are retained and become active poisons. This is only one of many potent factors which conspire to derange the normal activity of the body in such periods. Why criminal impulses are more active, and less under control in seasons of unusual heat, is not yet clear. The real explanation must be along physiological lines, and facts that show the physical basis of crime. Among alcoholics, the unusual action of spirits on the brain, first irrigating, then narcotizing the brain centers, more profoundly and rapidly at this period is the common observation. But why persons who do not use spirits should give way to impulses at this time, which they are able to control in cooler weather, is a mystery. To say that the brain centers are more unstable, and have less resisting power; also that states of hyperæmia are present predisposing to these abnormalties, is not a full or very satisfactory explanation. The fact to be recognized practically is of more importance than the theory of causation. Viewed from its medical side crime committed in these hot seasons, points to physical conditions that are not reached by locks and bars. Many of these criminals need active medical care more than punishment.

There are many and preventable causes that can be known and reached in this field. Disease following and dating from injury due to periods of excessive heat, suggest to the thoughtful physician different therapeutical lines of treatment. Crime evidently dating from, and due largely to the same cause, is treated as more culpable by the courts. The quiet, inoffensive man who suddenly on a hot day, without having used spirits, becomes angry and assaults some one, is suffering from brain disturbance. A man equally quiet and unobtrusive, feeling bad on a similar hot day, drinks some spirit mixture, and soon after commits assault, or theft, or breach of the peace, or abuses his family, or horse, etc., etc., is suffering from similar causes, and needs medical treatment.

Physicians should study and educate public sentiment to recognize the physical and medical side of these cases. The experience of the recent heated term, if gathered up by competent students, would furnish a chapter of remarkable facts of the most intense scientific interest. These facts are more apparent in the northern and western States, than in the south, and have a direct bearing on the crime wave theory which seems so often supported by statistics.

This theory assumes that crime is due to cosmical and physical causes, which at long intervals gather and burst like storm clouds, then die away to a minimum. A prolonged heated term brings out a vast number of corroborative facts, and also points out apparent causes which seem to be active factors. The teachings of science show that disease and crime are literally interchangeable terms, and the relation is very intimate. Now if certain extreme changes of temperature are followed by increase of one or both, this fact indicates the operation of physical laws that should be studied and understood. Almost every active medical man in the country can contribute facts bearing on this question. Let every physician inquire into the crime and disease of his neighborhood that was dependent in whole or in part on the extreme hot period just past. Also the influence of the epidemic influenza in the past, and alcohol, with all the various unsanitary conditions which favor degeneration and debility.

From the accumulation of numerous facts of this character, many valuable deductions may be drawn, together with practical hints for prevention and treatment.

THE MANAGEMENT OF THE COMPLICATIONS OF POTT'S DISEASE.

Deformity, abscess, and paraplegia are the only complications of Pott's disease occurring with sufficient frequency to merit especial consideration. The management of these complications at the present time is much as follows:

Deformity may be more or less corrected in those cases where the reparative action has not yet reached the stage of appreciable consolidation; or it may be accepted. For correction of the deformity three methods are employed: 1. *Immediate redressment* by longitudinal and antero-posterior traction with weights and pulleys, the patient lying prone, followed by immobilization with the "shell-back" cuirass (Blanchard); 2. *interrupted redressment* by partial vertical suspension repeated at intervals of a few weeks or months, the spine being immobilized during the interval with the plaster jacket (Sayre); and 3, *gradual redressment* by continuous action of the antero-posterior leverage brace (Taylor). The circumstances surrounding the individual case should decide the choice of method.

It appears that reparative action is delayed by the corrective process and that permanent consolidation does not take place until immobilization has become continuous and complete. For this and other reasons the majority of surgeons accept the deformity present and immobilize immediately from the beginning of treatment without any attempt to correct the deformity.

Abscesses so located as not to interfere with the application of the immobilizing apparatus and causing no constitutional symptoms have been generally left without interference, but recently there is a growing tendency to aspirate if it is possible to reach the abscess before it has attained any considerable size and inject the cavity with an aseptic mixture of iodoform in glycerine or olive oil. Large abscesses may be opened, their cavities cleansed, injected with the iodoform mixture and closed without drainage. A few remain closed and heal, many refill and opening spontaneously are in no better and no worse condition than if left without interference, and a few become infected and seriously threaten the patient's life. Permanent drainage of these abscesses by the insertion of a tube into the opening adds to the chances of infection and prolongs indefinitely the final closure of the sinus. Without strict asepsis operative procedures should not be attempted; with strict asepsis drainage is unnecessary.

Motor paraplegia requires no special treatment. The area of the diseased spine should be immobilized, the patient should be kept continuously recumbent, and if occurring early in the disease, longitudinal horizontal traction may be employed. Cauterization over the kyphosis is cruel and useless, and the enormous doses of iodide of potash recommended some years ago by Gibney are of very doubtful benefit except in cases where there is a strong suspicion of inherited syphilis. Nearly all cases treated by immobilization and recumbency recover from the paraplegia within from one to three years. Paralysis of sensation as well as motion adds much to the seriousness of the complication. Lamnectomy is justifiable, but less benefit is now anticipated from it than was looked for when the operation first came into vogue. Most cases suffering from sensory paraplegia as a complication of Pott's disease ultimately succumb.

EDITORIAL NOTES.

Foreign Bodies Left in the Abdominal Cavity.—The abdominal walls and cavity display at times a tolerance to surgical manipulations that sets at naught the preconceptions of all students of the authorities. In one respect, however, this tolerance is not very liberally displayed—when foreign bodies, inclusive of articles used by the surgeon, are left behind in the peritoneal cavity after an operation. But even instances of tolerance in this respect are not unknown, where the patient refuses to die even although such an article has been left within the sewed-up wound of a laparotomy. From a Paris letter to the *Medical Press and Circular*, we learn that Dr. Pilatte presented to the Société de Chirurgie a compress of antiseptic gauze that had been detained in a patient's abdomen for eight months. A laparotomy was done upon this woman in April, 1891, followed for a number of weeks by a fair recovery, until in the following August, when pain began to declare itself in the abdomen. The pain grew progressively worse through October and November, until finally, inDecember, the patient passed by the rectum a roll of gauze fully 8 inches long, which must have been forgotten or overlooked after the laparotomy. Since the escape of the roll of gauze, the abdominal pains have ceased. M. Quénu stated that a similar incident had occurred in his practice. A woman was being operated upon by abdominal section, when a fainting fit made him and all his assistants direct their attention to the cardiac and respiratory needs of the patient. A compress that was used to prevent an escape of the intestines was drawn into the abdominal cavity, and hidden from view by the movements of the woman. The surgeon was assured by his assistants that none of the surgical materials was missing, before he proceeded to close the wound. On the fourth day, however, the patient died. An autopsy was had, and the compress was found twisted in among the intestines. Ever since that time M. Quénu has kept an accurate count of the compresses, as well as of the sponges, that are used in his operations. M. Terrier said that one of his associates had recovered a pair of forceps after a lapse of eight months. The instrument worked its way out through the umbilicus, and the patient got well. He had himself lost a sponge through a failure to keep a strict count, and the patient lost her life by peritonitis in consequence of the oversight. There are very few surgeons, in the present day, who do not tally off their sponges both before and after an operation. But even this precaution may not avail; it did not suffice on one occasion at least, for a too enthusiastic and helpful nurse tore a sponge in two, and thus caused the count to miscarry. Of all the materials employed by the laparotomist, his sponges are the ones he is most anxious about, since they are the most readily overlooked, and have been overlooked by some estimable and cautious surgeons. These incidents, or accidents, cause chagrin to the surgeon even if the patient's life is not lost thereby; for the patient's road to recovery is greatly hampered by the weeks and months of intense suffering that ordinarily ensue while nature is endeavoring to eliminate the offending body. Extreme vigilance in this regard is the price paid for the best results.

Symptomatic or Secondary Forms of Appendicitis: Paretic Distension of Cæcum.—An admirable paper on appendicitis, as a symptom of distended cæcum, is to be found in the *New York Medical Journal*, July 16, by Dr. P. C. Barker of Morristown, N. J. The author has made it his practice for thirty years to notice and study the cæcum and appendix in every available case of abdominal section. It is his observation that the orifice of the appendix is not always easily discoverable from the mucosal aspect, even when the bowel has been fairly laid open. It is sometimes necessary to search around with the probe point before the orifice is definitely located. But a very different state of things is likely to occur when the bowel at that point becomes progressively distended and inefficient, and when a chronic constipative tendency has been established. The anatomical relations are no longer normal, either as concerns the cæcum, or the meso-cæcum when it exists, or the ascending colon. The latter may be temporarily overloaded with fæcal masses, or it may take on a chronic paretic condition. Peristalsis is proportionately lost; in the chronic groups of cases the cæaum may never be emptied entirely. And what may we infer as a legitimate consequent from these conditions? "It is a fair inference," says Dr. Barker, "that the swarms of micro-organisms that successively work over these detained waste contents of the cæcum are more numerous here than in any other portion of the alimentary canal." It is a clinical fact that the disengaged gases—disengaged but not liberated from that angle in the canal—bring about a more and more relaxed and paretic muscular state. The author has seen this so often that he thoroughly believes in what may be called the paretic cæcum. This may occur in persons whose bowels are reported to be "regular," but constipation is the rule; there may be some degree of distention at the McBurney point, and also some malaise from an autointoxication of fæcal origin.

The next step implies that this paresis of the cæcum effaces the folds and valves that protect the appendix-orifice. The latter is made to gape and may then more readily admit of seeds, concretions, fragments of fæces and the like. With these, and even before them, there may enter the appendix those micro-organisms that infest the canal and its waste products. "And as foreign bodies of appreciable size are oftener absent than present in appendicitis"—and here we have perhaps the seed—thought of Dr. Barker's propositions—"it is quite probable that these microbes not only gain entrance into the appendix, but that they are *the real exciting cause* of the destructive inflammation.

As a merely suggestive addition the writer asks if the bacillus of Klebs-Loeffler may not be the organism that has brought about the present increased prevalence of appendix mischief. It devolves on some one or more of our bacteriologists to throw light on this hypothesis. It may also be questioned if recurrent appendicitis can be made to rhyme with this proposition; for, if the germs of Loeffler or any other pathogeny can thus become entrapped within the walls of the appendix, can their course be other than progressive and without remission—therefore without recurrence? Possibly not, since the microbes would seem to have their most favoring terms of propagation, with a source of supply in the cæcum unreduced and practically limitless.

The work of the microscope seems to be especially called for in this pathogenic field. We need it, in this class of the inquiry more especially, in order to determine whether the parent disease is cæcal or appendical. Dr. Barker's line of therapeutic suggestion based upon the idea of a paresis of the cæcum, permitting bacillar extension and consequent trouble, implies the use of intestinal disinfection and laxation. He states that salol, phenacetine and the mild chloride of mercury have helped him over some "rough spots in the road." During the last three months he has had three cases concerning which he believes that this line of medication has put him in the way of obtaining, in each case, a speedy and good recovery; two of his patients were young lads, the other was a man of fifty—they all three were original seizures.

In a recent meeting of the Clinical Society of London, Sir Dyce Duckworth spoke to the point of the nomenclature of right-groin trouble, and he averred that he did not subscribe to the dropping of the "typhlitis" and the supplanting thereof by "appendicitis," a word which might be American, but certainly is not English. He would undertake to say that this latter word will not appear in the next edition of the Nomenclature of Disease, now in course of compilation by the Royal College of Physicians, nor in the Transactions of the Society. He urged that there must be a great many cases of trouble in the right groin, not associated with an originally diseased state of the appendix, such as a local inflammation of the caput coli, "for which the best remedy was a purge." He had seen many cases of catarrh of the vermiform appendix probably caused by exposure to cold, and an easy step beyond that point will be the formation of concretion in that location.

When we reflect that the word "appendicitis" is only five years old, we can readily understand and almost approve that conservatism of our British friends that leads them to hold that word on a longer probation. But we will make this prediction that if the forthcoming Nomenclature does not contain the term, then the edition next to follow will admit it. The term has come to stay. And furthermore, we may expect other new terms, derived from the same root-meaning, to fit in with our growing knowledge regarding right-groin inflammation. For example, the word "appendectomy" has already been proposed in order to cover, with one word, the idea of a laparotomy performed for the relief of appendicitis.

Camphoid, a new Collodion.—The *American Druggist* refers to the above named substance as a possible substitute for collodion. It is a property of iodoform that it is soluble, one part in ten, in Rubini's solution of camphor—that is, equal parts by weight of camphor and absolute alcohol—and may be thus used as a topical application. This requires fixing on the part, to get the best results; this object is attained by the addition of pyroxylin, one part in forty of the iodoform and camphor solution. A complete solution can be made in these proportions. When applied to the skin with a brush, the fluid does not spread, but dries up in a few minutes and leaves an elastic opaque film that will not readily wash off. The excess of camphor volatilizes and masks the odor of the iodoform. The gun-cotton may be used with the simple camphor solution, in the strength above mentioned, and be made to serve as an eligible base for dermatic medicaments, such as resorcin, chrysarobin, ichthyol, iodine, carbolic acid or salicylic acid. Martindale, in the *Pharmaceutical Journal* for April 9, suggests that, if the camphor and pyroxylin solution shall prove acceptable to the profession, it may be named "camphoid..' In that event, the formula would read as follows: Camphor, 20 parts; absolute alcohol, 20 parts; pyroxylin, 1 part.

The Three Stages of the Medical Student's Life.—The late Dr. Henry Gawen Sutton, of London Hospital and College, was in the habit of dividing up medical student life into three stages, as follows: "First, he doesn't know; second, he thinks he knows, and then he doesn't know, but he stands on his feet like a man, and gives confidence to his patients."

The Citation by J. B. H., on page 145 of this current number, of the line from Pope is a movement in the right direction. It goes to show that, even as late as the time of that poet, the disagreements of dialecticians were more prominent in his mind, at least, than were the differences of medical men. But anterior to Pope there was an old latin saying—probably from the times of the schoolmen—containing the words *doctor*, in the sense of teacher, and *discipulus*, or student, in antithesis. This latin adage, and its side-lights, would help to rectify a blundering slur on medicine.

Dr. Chas. Warrington Earle has resigned the call to Rush Medical College, of which mention was made in our last issue.

ABSTRACTS.

Venomous Snakes of North America.—Dr. Barringer, of the University of Virginia, has given, in the last volume of *Transactions* of the Southern Surgical and Gynecological Association, his views regarding the dangerous serpents of the United States. The rattlesnake, the copperhead, and the water moccasin are sufficiently established in their reputations and have been often described; the first of these is sluggish, the second agile, and the third spiteful. The dangerous capabilities of the harlequin snake, the *elaps fulvius*, however, are less known. This beautiful little reptile, sometimes known as the coral snake or bead snake, is the only known representative of the cobra family in North America. It is found from Virginia to Texas. Its average length is not more than eighteen inches; in color it is blue-black, with brick-red and yellow bars along the caudal extremity. It is gentle and may at times submit to handling without biting. It has fangs, however, and Dr. Barringer has known of a fatal case, death following within twenty hours after its bite. The author estimates that ten per cent. of rattlesnake bites cause death; only one per cent. by the copperhead, and no deaths are known to him as having resulted from the bite of the moccasin. No bacteria have been found in the venom of snakes freshly taken, but a host of septic bacteria may exist in the saliva of these animals, left in the mouth from its food. These latter germs flourish to a greater or less extent in the buccal mucus, and in the case of the copperhead this mucus is so abundant that the name "cotton-mouth" is frequently applied to the snake. In about five per cent. of snake bites a chronic septicœmia is a result of the introduction of these septic germs of the salivary fluid.

BOOK REVIEWS.

A Treatise on Diseases of the Nose and its Accessory Cavities. By Greville MacDonald, M.D. Second Edition. London and New York: Macmillan & Co.

This little volume of less than four hundred octavo pages is dignified by the author with the title prefix of "A Treatise," which its size makes us resent, but if we measure the value of its contents by the character of its subject-matter, we are quite ready to say the title is well deserved.

The author further tells us the book is written particularly for general practitioners. In this he has hit the mark. Nasal affections are among the most common of maladies. Many are easily treated by the general practitioner, for the success of which he needs just such a guide as we find in Dr. MacDonald's book, which sells for the modest sum of $2.50. The illustrations are numerous and excellent.

Public Health Papers and Reports, Vol. XVII, presented at the nineteenth annual meeting of the American Public Health Association, Kansas City, October 20–23, 1991.

The annual volume of the American Public Health Association is before us, and as usual made up of a series of papers by eminent sanitarians, every one is of special value, the scanning of which makes us wish for space to add to its usefulness by a republication in the pages of The Journal.

The next meeting will be held in the City of Mexico, November 30, 1892.

Fourteenth Annual Report of the Board of Health of the State of Connecticut. Year ended November 30, 1891. Registration Report for 1890 of Births, Marriages, Deaths and Divorces. State Printers, Tuttle, Morehouse and Taylor: New Haven. 1892.

This volume contains 650 pages, of which 446 are devoted to the sanitary operations of the Board, under the supervision of Dr. C. A. Lindsley, Secretary, while the remaining pages contain the tables and comments of the Bureau of Vital Statistics.

The State appears, from the reports of the various districts, to have been comparatively free from typhoid fever, in epidemic form, as compared with some recent years. One of the papers of this Report, however, gives some important details respecting an outbreak of fever at a hotel of a popular summer resort. One of the features of the epidemic was the fact that none of the victims were taken down with the fever until they had returned to their homes. And thus it yields a curious instance of typhoid fever taking its origin in one place, from a given water-supply, and the patients separating to widely distant parts of the country during the incubation period, and becoming sick simultaneously or about the same time. The investigation was undertaken by Dr. Herbert E. Smith, of Yale Medical College, and he appears to have welded a strong chain of evidence incriminating drinking-water drawn from cistern supply. The locality infected was Money Island. one of a group of islands in Long Island Sound, much resorted to in the summer months, a nearly bare rock of six acres extent. The infecting case was the keeper of the billiard hall, whose symptoms were those of a "walking case." Of twenty-seven guests of the inn, twenty were traced to their subsequent abodes and were known to have had the fever. One patient only died. None of the employés of the inn appeared to have contracted the disease, they having a different well water for their supply; this water was far from being pure, but it did not receive the infection to which the guests' supply was peculiarly exposed.

Another paper has for its subject the prevalence and peculiar conditions observed as to tuberculosis in New Haven, during a period of fifteen years, prepared by Dr. L.

S. DeForrest. He made a special study of the recurrence of the disease in the same dwelling-houses during those years. He concludes that not a few domiciles of that city have become distinctly dangerous as places of residence, and require specific although not difficult measures to be put in force in order to overcome their infective characters. These measures relate chiefly to the prevention of dried sputum in the house, and to the adoption of ventilation regulations in the homes of the poorer class of people.

A considerable space is given to the reporting of studies that have been made, during the past two years, concerning the surface drinking-waters of the State. There have been sufficient results from these studies to show that a good annual appropriation should be at the disposal of the Board of Health for many years to come. States which, like Connecticut, double their manufacturing wealth every few years, must expect to expend liberally and steadily, for the protection of their citizens from river pollution. Communities too easily ignore the responsibilities that belong to every phase of material advancement. There is no kind of prosperity that can be enjoyed gratis and without commensurate obligation in official life. It commonly rests with medical officials, too, to have to make the fight on behalf of the citizens and their endangered sanitary rights. We close this notice by quoting a wise saying from the Secretary's report, as follows: "It is a trite saying that a spring cannot rise higher than its source; it is equally true that a spring cannot be purer than its source."

A New Pronouncing Dictionary of Medicine. By John M. Keating, M.D., Fellow College of Physicians of Philadelphia; Visiting Obstetrician to the Philadelphia Hospital, and Lecturer on Diseases of Women and Children; Gynecologist of St. Joseph's Hospital; Surgeon to the Maternity Hospital, etc.; Editor "Cyclopædia of Diseases of Children," and Henry Hamilton, author of "A New Translation of Virgil's Æneid into English Rhyme;" Co-author of "Saunder's Medical Lexicon," etc. Price, cloth, net $5.00; Sheep, $6.00 net.

A voluminous and exhaustive handbook of medical, surgical, and scientific terminology, containing concise explanations of the various terms used in medicine and the allied sciences, with phonetic pronunciation, accentuation, etymology, etc.

Most physicians will be pleased with the author's adoption of the anglicized pronunciation, adhering, as he does pretty closely to the general rules laid down in Worcester for the accentuation of English words.

The table of signs and abbreviations is the best we have seen. The table of suffixes and prefixes adds much to the usefulness of the work. While the systematic labor of the author has given us a very valuable dictionary, the publisher has done his part in issuing a book of handsome appearance, but of unnecessary size. The type is new, and attractive in style, but at least two sizes too large. The paper is of fine quality, but extra thick and heavy, the latter qualification being very undesirable in a dictionary. The size of page is convenient but with altogether too much margin for the print. All of which makes us think the publisher is ignorant of the purposes of the book.

A System of Practical Therapeutics, edited by Hobart Amory Hare, M.D., assisted by Walter Christie, M.D., Vol. iii.

This portly tome and last volume of this system of therapeutics follows quickly after its predecessors. The several sections are on Diseases of the Skin, of the Nervous System, Genito-urinary Apparatus, the Eye and Ear. All of which are followed by a complete index.

The chapters on skin diseases are by Drs. H. Radcliffe Crocker, W. A. Hardaway, J. Nevins Hyde and M. B. Hartzell. All of whom are recognized authorities in this specialty.

Among the authors on diseases of the nervous system, we find the names of Edward N. Brush, H. M. Bannister, B. Sachs, J. C. DaCosta, M. Allen Starr, Chas. K. Mills, Landon Carter Gray, Wharton Sinkler, C. E. Riggs, J. Ransohoff, T. D. Crothers and F. H. Dercum.

In like manner the other sections of the work are filled with chapters by prominent and well known specialists, whose professional standing places their literary work beyond the realm of criticism.

SELECTIONS.

Hereditary Transmission of Mutilations.—Dr. C. G. Lockwood, of New York, has recently published some interesting results of his experiments on the hereditary transmission of mutilations. White mice were selected on account of their rapid breeding, as they begin to breed every thirty days. He bred them in-and-in for ninety-six generations, destroying all the sickly and defective ones, and in this way obtained a larger and finer animal than the original pair. His experiments in breeding their tails off were done by selecting a pair and putting them in a cage by themselves and clipping the tails of all the young. When these were old enough to breed he selected a pair, and when they had young, clipped their tails. By continuing this breeding, in the seventh generation he got some young without tails, and finally got a perfect breed of tailless mice. By taking one with a tail and one without a tail, and alternating the sexes in each generation, he finally again got a breed of all-tail mice.—*N. Y. Med. Record.*

Prevention of Puerperal Sepsis.—The application of prophylaxis can have no more useful place than in the lying-in chamber. It is here that an ounce of prevention is worth many pounds of cure. It is doubtful whether puerperal sepsis can be cured in every instance of its invasion, but it is almost certion that it can be prevented in ninety-nine cases out of a hundred. The absorbing interest which is manifesting on this subject is apparent when medical societies in cities, towns and hamlets are everywhere discussing the question with a degree of earnestness, intelligence, and liberality that is as encouraging as it is instructive.

There can be no doubt that a great responsibility rests upon the obstetrician of to-day, greater than at any period in modern times. He must contest the ground with the abdominal surgeon for a record, and especially must he contest the field with the maternity physician for as good work in the mansion, the villa, the cottage and the tenement house. The family physician, who is likewise the obstetrician in the rural districts, must be able to show as good a record as his brother who practices in the courts and alleys of the populous cities, or as he who has the advantage of service in the lying-in hospitals. A few years ago the crowded maternity was considered about the worst place in which a woman could be confined. It was often necessary to close up such an institution when invaded with an "epidemic" of puerperal fever. Now such a thing as closing a maternity by reason of a large number of consecutive deaths from puerperal sepsis is unknown. In a thousand cases we hear of scarcely a death, and there is no such thing as an "epidemic" of puerperal fever.

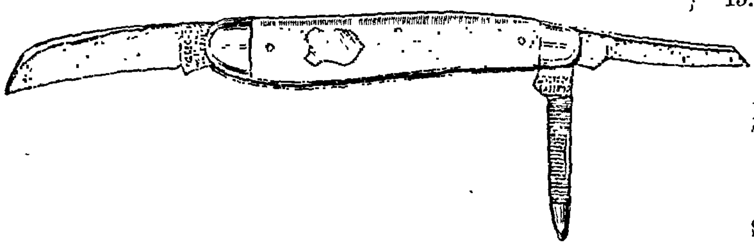
We have said that much responsibility rests upon the shoulders of the family physician in the rural districts, and he must look to it that his cases are properly prepared for confinement by clean hands that are versed in all that is meant by the term "asepsis." When the general practitioner can be made to enforce the simplest rules of asepsis that he perfectly well understands, but is careless about enforcing, we shall soon hear almost nothing of puerperal fever or of ophthalmia neonatorum. It is not competent to plead lack of time or inconvenience in carrying out those simple details of cleanliness which are the foundation of prophylaxis in the lying-in chamber, and which must be insisted upon where human life is at stake, or loss of vision in the new-born is so often threatened.

Quinquaud has confirmed Unna's statement as to the presence of a special microbe in soft chancre. It is a bacillus with rounded ends, and is generally arranged in chains. It is present in prodigious numbers in the lymphatics and intercellular spaces.—*Medical Review.*

A POCKET PLASTER-KNIFE.

BY JNO. RIDLON, M.D., CHICAGO.

At my suggestion J. Curley & Bro., 6 Warren St., New York, have constructed the knife shown in the illustration.



The large blade is a short pruning blade of extra thickness in the shank and thin at the point for use in cutting down plaster corsets and such splints as the surgeon may desire to preserve in perfect shape. The pen-blade is for use when it is desired to preserve the jacket or splint. Being entered obliquely layer by layer of the plaster bandage rises as it is cut through, all troublesome wedging of the knife is avoided, and the chances of wounding the patient are lessened. The third blade is a nail file with Curley's patent burnisher.

MISCELLANY.

Meeting of the American Electro-Therapeutic Association.—The next meeting of the American Electro-Therapeutic Association will be held this fall in New York City, at the Academy of Medicine, on October 4, 5, and 6. The President is Dr. William J. Morton of New York, Secretary, Dr. Horatio R. Bigelow, 1716 Chestnut St., Philadelphia. The local Committee of Arrangements are Drs. Robert Newman and A. H. Goelet of New York.

American Dermatological Association.—*Programme of* the Sixteenth Annual Meeting of the American Dermatological Association to be held at the Pequot House, New London, Conn., September 13, 14, and 15, 1892.

Papers:

1. Iodine and Carbolic Acid in the Treatment of Skin Diseases, by Dr. C. W. Cutler.
2. Additional Note on the Treatment of Erysipelas based upon a second series of fifty Cases, by Dr. C. W. Allen.
3. A Suggestion for Operative Procedure on erectile Nævi over Fontanelles, etc., by Dr. S. Sherwell.
4. How Should Dermatology be Taught? by Dr. G. H. Fox.
5. A Somewhat Unusual Case of Lupus Ulceration of the Nose, by Dr. H. W. Stelwagon.
6. Lupus Vulgaris following Exposure to Tuberculous Sputa, by Dr. W. T. Corlett.
7. Notes on the Treatment of Lupus Erythematosus, by Dr. J. Zeisler.

Discussion on Alopecia Areata:

1. Are there two forms of alopecia areata; one parasite and one neuropathic?
2. Is there sufficient evidence to prove the contagious nature of the disease?
3. Does arsenic or any other internal remedy influence the course of the disease?
4. What is the comparative value of carbolic acid, and of other topical remedies?
5. Will epilation of the margin of the patch prevent its spread?
6. What circumstances influence the prognosis of the disease?

8. Alopecia Prematura; its most Frequent Cause, by Dr. G. T. Elliot.
9. Cases of Favus Contagion from the Lower Animals, by Dr. S. Sherwell.
10. Some Observations on the Growth of Achorion Schoenleinii in America, by Dr. L. Heitzmann.
11. Morphœa Atrophica, by Dr. R. W. Taylor.
12. Psorospermosis, by Dr. M. B. Hartzell.
13. Report of a Case of Adenoma Sebaceum, with Microscopic Drawings, by Dr. J. A. Fordyce.
14. Concomitance and Sequence in Skin Eruptions, and the Influence of one Dermatosis upon another, by Dr. C. W. Allen.
15. The Cicatrices of Syphilis, by Dr. J. N. Hyde.
16. An unusual Case of Syphilis, by Dr. R. B. Morrison.
17. An exaggerated Case of Impetigo Contagiosa, by Dr. G. T. Elliot.
18. Notes on a Recent Visit to the Leper Hospital, Havana; Leprosy in Charleston, S. C., etc., by Dr. W. T. Corlett.
19. Notes on the Use of Thilanin, by Dr. G. H. Fox.

Southern Surgical and Gynæcological Association.—The annual session of the Association will be held in Louisville, Ky., on November 8, 9, and 10. Those proposing to assist in making the meeting a success by the contribution of papers should promptly notify the Secretary, Dr. W. E. B. Davis, of Rome, Ga., of the titles at their earliest convenience. To those desiring to nominate candidates for membership, blanks will be furnished on application. Dr. J. McF. Gaston, of Atlanta, Ga., is president, and is actively at work to make this session as great a success as any of its predecessors.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from July 16, 1892, to August 5, 1892.

Capt. Edwin F. Gardner, Asst. Surgeon U. S. A., is granted leave of absence for fifteen days.

Major C. E. Munn, Asst. Surgeon U. S. A., leave of absence granted for seven days, and extended thirteen days, is hereby further extended three days.

Major Alfred A. Woodhull, Surgeon, granted leave of absence for two months, to take effect on or about August 1, 1892.

P. A. Surgeon Henry B. Fitts, U. S. Navy, is assigned, temporarily, to the charge of the Army and Navy General Hospital, Hot Springs, Ark., to take effect during the absence therefrom of Surgeon Woodhull, the surgeon in charge. *By direction of the President.*

Major C. E. Munn, Surgeon U. S. A., leave of absence granted for seven days is hereby extended thirteen days.

Lieut.-Col. Charles R. Greenleaf, Asst. Medical Purveyor U. S. A., will proceed at the proper time to Montpelier, Vt., and visit the camp of the Vermont National Guard during the period of its encampment, commencing August 23, 1892. By direction of the Secretary of War.

Major J. K. Corson, Surgeon U. S. A., granted leave of absence for one month, to take effect on or about August 2, 1892, provided Capt. W. B. Banister, Asst. Surgeon U. S. A., shall have returned from leave of absence, with permission to apply for an extension of one month.

Capt. William O. Owens, Asst. Surgeon U. S. A., leave of absence extended fourteen days.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending August 13, 1892.

Surgeon P. A. Lovering, ordered to the Marine Rendezvous, Boston, Mass.

The Journal of the
American Medical Association

VOL. XIX. CHICAGO, AUGUST 20, 1892. No. 8.

ORIGINAL ARTICLES.

THE MANAGEMENT OF GANGRENOUS HERNIA, WITH REPORT OF A CASE.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892

BY JOSEPH RANSOHOFF, M.D.,
OF CINCINNATI, O.

(*Concluded from page 198.*)

When gangrene involves the entire knuckle strangulated the appearances are sufficiently characteristic. Chocolate or dark slate colored, denuded in patches of its peritoneum and in a collapsed condition, it fails to react to mechanical or chemical irritation. The odor is fetid before perforation has taken place. Where the strangulation has been very acute, as in the last case reported, the changes in and about the hernial sac need not be very marked. After the escape of a varying amount of turbid bloody fluid from the sac, the latter appears of a bright or dusky-red minus the glistening appearance of the normal serosa. When it is of older date one after another of the hernial coverings are involved in the inflammation. They are welded together, in turn to break down. A fecal abscess is the result. In the recent strangulation no difficulty is encountered in bringing the intestine into the wound after division of the ring. In that of four or five days, adhesions make this the most delicate part of the operation. It is here that the lesions most difficult to deal with are found, and which, with or without operation, are the most frequent death-causing factors.

The most serious and far-reaching changes in gangreneous hernia are often found in the afferent portion. They may be said to involve its calibre, its nutrition, its contents and the peritoneum singly or together. Although long recognized, the dangers inherent in this part of the intestine have recently been strongly brought forward by Beneke. Above the constriction there is always some dilatation with more or less paresis and congestion of the intestinal wall. It may be darker in color and œdematous from venous stasis. Possibly from the same cause its mucus lining secretes abnormally and as a result at times enormous accumulations of fluid are found. According to Mikulicz from one to three quarts. This forms an excellent culture medium for bacteria and in the process of putrescence toxines are formed, the absorption of which doubtless accounts for many deaths under the mask of acute sepsis from strangulated hernia before peritonitis has developed. The disintegration of this fluid gives rise to a fecal odor irrespective of the site of the constriction, and it is this fluid forced into the stomach and thence regurgitated that is so often mistaken for fecal vomit. (Mikulicz.) Furthermore the wall of a paretic and congested gut has no power to resist the pathogenic organisms which it encloses. Far above the constriction hæmorrhagic infiltrations, diphtheritic-like deposits on or ulceration of the mucus membrane may ensue. This is far more liable to such necrotic changes than the outer tunics and there is no way of knowing how far the process has extended. In one of Kocher's[15] cases the gangrene extended four inches and in one of Taendlers [16] six inches above the suture line. In a case not submitted to operation the diphtheritic deposits were found six feet above the constriction.

When death follows hernia, the symptoms of peritonitis are rarely absent. In the majority of cases, even of gangrene, there is no perforation within the the abdomen, and the course of the peritoneal infection must have been through the macroscopically intact gut. That it may occur where the gut does not enter into the hernia has already been seen (Case 1). It has long been known through Nepven's[17] investigations that the fluid transudate in a hernial sac is rich in pyogenic organisms before gangrene has developed. Boenveken[18] has recently shown that the bacteria readily pass through the wall of the paretic bowel and produce peritoneal infection. On microscopic sections he was enabled to trace their progress through the intestinal wall. From these metastatic infection in remote organs may ensue. The process is like that seen in other morbid conditions of the intestine; notably in typhoid fever and appendicitis, where peritonitis develops without actual perforation.

Equally important with the local, is the general condition of the subject of a strangulated hernia in determining the plan of procedure. When delay has brought the patient to the verge of collapse, when even the shock from prolonged anæsthesia cannot be ventured, that must be done which most readily gives relief to the strangulation. It may be the opening of a fecal abscess, the division of the stricture, or the rapid fixation of the gut in the wound. Whatever the procedure adopted in the condition indicated, the result will probably be the same—death within a few hours or days.

In most cases, however, the condition is less deplorable, and evidently tolerant of a somewhat prolonged operation. It is in this class that choice must be made between the establishment of an artificial anus and resection of the bowel, with immediate suture of the divided ends.

Unfortunately, authorities are not to be relied on, for they are divided. In England, Baker, MacCormac, Banks and Treves decidedly oppose the greater operation of resection. In this country the same opinions have been held, unless they have been recently influenced by the reports of successful cases of excision by McCosh,[19] Richardson,[20] Dawborn[21] and others. In Germany, Kocher's and Czerny's first successes were followed by many failures, which frustrated the natural desire of surgeons to make primary excision the normal procedure in gangrenous hernia. Finally, Reichel's[22] critical review of the statistics in 1883 made it appear that the preferable primary operation was enterostomy, to be followed by a second operation for the closure of the preternatural opening. From the very first Kocher has remained steadfast to the ideal operation, and in Mickulicz he has recently found a most able supporter.

The advantages and disadvantages of the two procedures are almost apparent. If primary resection is successful, the patient is well in from four to six weeks. If an artificial anus is established, a second operation of very serious nature must follow. The artificial orifice is as large as the bowel, and the mucous membrane is prone to prolapse. Such an opening never closes spontaneously.

While in a considerable number of cases the enterotome of Dupuytren might be successfully applied with the low mortality of 5 per cent. (Korte),[23] it will fail in many cases, and be absolutely inapplicable in others. Again, according to Dupuytren, it should not be used until two or three months after the primary operation. It is during this interval that the very greatest danger from the artificial anus is encountered, that from progressive inanition. Recently Poulsen[24] has used it twelve and even nine days after the first operation.

It has not yet been established how much of the intestinal canal is essential to the maintenance of nutrition, but where the fistula is above the mid part of the ilium, rapid emaciation and death follow before any secondary procedure for closing it can be practiced. McCosh does not overrate the argument of statistics in the statement that the death-rate of all cases in which an artificial anus is made, including the operations for its relief, is 50 per cent. The danger from secondary resection and enterorrhaphy is very considerable. Haenel mentions 43 cases, with 16 deaths and 2 failures.

To be successful the artificial anus must be established in healthy bowel, else the dangers inherent in the afferent portion will not be removed, nor will a free outflow from the intestine be secured. The only advantages, therefore, which can be claimed for this method, are the rapidity with which it can be performed and the slight technical skill required in its performance. A further advantage is supposed to exist in the lesser danger connected with this as compared with the major procedure of immediate resection.

There is hardly a subject in surgery concerning which statistics are so much at variance as are those relating to gangrenous hernia. According to Korte, of 111 cases treated by enterostomy, 11 ended fatally. Herman (quoted by Haenel) mentions 83 cases, with 7 deaths. On the other hand, Weil[25] reports 15 cases, with 13 deaths. Benno Schmidt places the mortality at 85.5 per cent. for the formation of an artificial anus, as against 71.1 per cent. for primary resection.

F. A. Southern, surgeon to the Manchester Royal Infirmary, recently reports 85 cases of herniotomy, with 9 cases of gangrene. All of the latter died. In 6 an artificial anus was made; in 5 primary excision

If statistics are of any value in solving the relative merits of enterostomy and primary excision, it is evident that the reports of scattered cases are far less weighty than such from a few and skilled operators, and from hospital records where nothing is concealed. Such a tabulation has recently been made by Mickulicz[26] from seven large clinics of Germany and Switzerland. Of 168 cases of gangrenous hernia, 109 died. Of 94 in which an artificial anus was made, 72 died; mortality 76.6 per cent. Of 68 primary excisions, 32, or 47.1 per cent., died. Of 6 intermediary resections, 5 died. It would appear from this that the mortality of primary excision is very much less than that of the lesser operation. But this can be accounted for by the certainty that the latter was often used as a last measure in conditions approaching collapse and therefore precluding the major operation.

The advantages of the primary operation are patent. Its disadvantages are in the time required for its performance and in the danger of peritonitis from imperfect technique. In a measure both can be overcome. The first of these is probably grossly exaggerated. With separation of the mesentery as indicated in the fourth case, and its closure by suture, to be followed by the continuous Lembert suture or by lateral anastomosis, not more than half an hour at most should be required for the enterorrhaphy. Complicated clamps, a separate row of stitches for mucous and serous tunics, interrupted sutures, unnecessarily waste time. Where the continuous suture is used and appears weak at points, a few supplementary stitches can easily be taken. Suturing the mesentery brings the intestinal ends naturally together, and gives assurance that the most treacherous part of the suture, that near the mesentery, can be properly applied. The second danger is from injudicious selection of the lines for suture. As elsewhere in gangrenous processes, the danger lies rather in removing too little than too much. If Kocher excised five and Koberle six feet of intestine, a few inches more or less cannot be important. In acute cases where the calibre of the gut has not been long occluded, and kerporostasis is little if at all developed, an inch or two on each side of the constriction groove will probably bring the suture line in healthy tissue. Where the mesentery has not been included in the strangulation the same favorable conditions may be expected. Where, however, much dilatation of the afferent gut exists, its thorough evacuation should precede the enterorrhaphy. After hernia as after laparotomy for obstruction, it is fatal to return a distended gut to the abdomen. The second danger, that of septic infection of the peritoneum, can in a large measure be reduced by thorough irrigation of the sac before suturing; by careful handling of the gangrenous gut without the wound, meanwhile protecting the peritoneum by gauze packing. Finally, the sutured intestine should be left just within the abdominal cavity and a radical cure should not be attempted. Mickulicz, whose success surpasses that of any other operator, 21 cases with 14 recoveries, insists on the open treatment of these cases. Should fecal extravasation ensue from defective suture or other cause, it would naturally turn toward the wound, whereby the danger of general peritonitis would be largely averted. For from two to five days after the operation the sutured intestine remains where it is placed within the abdomen, and after that length of time the development of peritonitis is not probable. To hasten the process of wound repair, deep and superficial sutures might be drawn through the wound margins and kept over the gauze packing, to be tight-ened without anæsthesia after the danger line has been passed.

Between the extreme measures considered, others looking towards a compromise have recently been brought forward by a number of surgeons. Among these are the intermediary excision and suture of Riedel.[27] The artificial anus is established in the usual way. After twenty-four or forty-eight hours the edges of the intestines are vivified and united by suture.

In 1882 Bourlly[28] suggested excision and suture, the latter being purposely made imperfect at one point to guide fecal extravasation. To avert the danger from imperfect suture, Hahn[29] follows the kelotomy with a median laparotomy. Through this wound he brings the divided ends of the bowel, thoroughly protecting the abdomen against infection by packing them in gauze. When the suture is completed, the closed knuckle is kept in the wound on gauze splints until union is assured. The competency of the suture is certain after twenty-four hours, when the bowel is returned to the abdomen and the external wound closed. It is difficult to understand why the same procedure could not be carried out in the inguinal herniotomy wound. Nevertheless Hahn has had two successes with it, and in a third reported by Kutschera[30] the result was equally satisfactory.

To overcome the danger of death from inanition, Helferich[31] has recently combined enterostomy with an intestinal anastomosis above the constriction furrows. By this method two courses are open to the intestinal circulation, and the closure of the artificial anus is greatly facilitated. The operation was done in two cases, one of which was successful, the fecal fistula closing spontaneously.

There is yet another class of cases in which the condition of the bowel is such that whereas gangrene is not yet present, it might through subsequent necrosis cause death, if returned to the abdomen. Such a knuckle is a menace. Who has not seen it; especially if operating by light both artificial and bad? Bowel that is not at all doubtful in appearance will at times repay the trust placed in it by a perforation. Among 96 deaths after herniotomy, it was in 26 cases the result of returning intestine to the abdomen which subsequently perforated. In Hagedorn's clinic three deaths out of fifteen resulted in the same way. To return doubtful intestine is unnecessarily jeopardizing life. To treat such intestine as radically as bowel already gangrenous, is an extreme measure not to be advocated. Fortunately, the intestine can be retained in the wound for a number of days by gauze packing or by sutures. When its viability has been established it is an easy matter to return it to the abdomen. Graefe[32] recently reported a successful case in which the intestine was so retained for five days before replacing it. Should the dread of adhesions be feared, the intestine might be retained just within the abdomen by fixation sutures or by gauze. In the event of gangrene the fecal extravasation would course towards the external wound.

When, in 1880, Czerny reported his first case of primary excision for gangrene, he believed that the operation would not displace the older operation of enterostomy. Although the last four years have brought forward success after success from primary resection, the dictum of Czerny still holds good. Each operation has its proper field. The boundary lines are becoming more clearly defined. Nevertheless, it must always remain for the judgment and tact of the surgeon, as individual cases arise, to determine the proper procedure to be adopted. In operative surgery as elsewhere, the ideal should be sought. This would make primary excision, the normal procedure in gangrenous hernia, and only cogent reasons should cause the operator to refrain from striving for the ideal.

Dr. Marcy, of Boston, opened the discussion by complimenting Dr. Ransohoff. Sometimes he thought we had too many operators, or rather too many attempting to operate who had not had the proper training. It is part of every physician's duty to know how to operate on a strangulated hernia. The inguinal hernia in the male is the most difficult class of hernia to cure. We have an opening that must necessarily be patent in every healthy man, and the wonder is that every male has not a hernia. Three centuries ago these herniæ were cured by sacrificing the testicle. Dr. Marcy described the different methods of radical cure, and emphasized the advantage of bringing the skin together by means of buried sutures so that not a vestige of a stitch is in sight. This stitch is very simple, but he had had great difficulty in teaching it to his professional brethren. By its use we avoid drainage and are able to seal the wound with iodoform gauze, and we may rest assured that if the wound is aseptic it will remain so, and patients are often up on the second or third day. The youngest child he had operated on by the sealing method was two months old, and of twenty operations 90 per cent. have remained cured. In femoral hernia most cases are cured by opening, stuffing and allowing to granulate. He had never operated on a case that was not cured. The only danger is the puncturing of the femoral vein, but that is the first thing that should be looked for. In umbilical hernia the whole sac should be removed, the danger then being from the thin walls in the neighborhood, which can, however, be reinforced. The chief points in the treatment of hernia are: aseptic or antiseptic surgery, the use of antiseptic sutures that can be left buried, and the wound so treated that it can remain closed and no dressing be employed.

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A FEW POINTS ON THE MANAGEMENT OF STRANGULATED HERNIA.

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The death rate from strangulated hernia throughout the land, has not diminished as it should have done in the face of modern surgery. Notwithstanding the mass of literature that has been devoted to this subject, and the fact that its importance has been fully recognized, from the earliest times to the present, strangulated hernia remains to-day as in years gone by, the dread of the average practitioner of medicine. Physicians who ordinarily act promptly and in the best interest of their patient, hesitate over strangulated hernia, trying first one thing, and then another, actually "frittering" away valuable time, and thereby sacrificing life.

This hesitation, and fear, not doing the right thing at the right time, perhaps has its origin, first, in the dread of former years, of touching any thing relating to the peritoneal cavity, and second, to the manner in which most of us were taught the anatomy of the parts.

It is not with the hope of presenting anything particularly new that this paper is brought before the surgical Section of the American Medical Association, but it is to emphasize in as concise a manner as possible, a few cardinal points in the management of strangulated hernia, and to enlist the aid of this Section in breaking up some false ideas retained by physicians as to their course of action with their cases.

With the physician who first sees the case rests the burden of responsibility, and if incompetent to carry out means of relief himself, he should realize that in not promptly placing the case in the hands of a man who can apply them, he is almost criminally indifferent to the welfare and safety of the patient.

When we are called to a patient who has abdominal pain, vomiting and distress, and who has a tumor in one of the regions subject to hernia, with perhaps a history of a swelling formerly reducible, but now not so, there is no difficulty in making a diagnosis of strangulated hernia. We do not always have so clear a picture as this. Local pain, even pain in any part of the abdomen is sometimes entirely wanting.

Three years since I was called in consultation and to operate on a young man attacked five days previously, where four different physicians had been in attendance, and only one had suggested strangulated hernia, because abdominal pain had been absent. When I operated, general peritonitis was well established as the result of a knuckle of gut constricted at the external ring. Here was a young man with a history of hernia, suddenly attacked by extreme depression amounting almost to collapse, with vomiting and with an irreducible swelling in the scrotum, and still his life was sacrificed while the doctors wrangled over the question whether it was an inflamed piece of omentum, an orchitis, or a strangulated hernia.

Pain at the point of constriction is in many cases absent, but general abdominal distress or "colicky" pains in the region of the navel less commonly so—this, general distress and the anxious expression of the face should in themselves be sufficient to tell of the serious character of the case and the need of prompt action, especially when we have the added evidence of a hard and irreducible tumor.

All of these symptoms are masked by the hypodermic use of morphia which is usually the first remedy applied by the attending physician—many a sufferer from strangulation being sacrificed by the use of the hypodermic syringe.

I cannot emphazize this danger to strongly. If opiates are used, do not allow them to deceive you into inactivity. The pathological changes are rapidly going forward. Your patient is on an express train whose destination is death, and it is traveling with frightful rapidity.

I look upon shock or collapse as one of the most important symptoms which we ever see in strangulated hernia, and when present, should cause us to act with decision, and promptitude. Many cases of death have been recorded as due to the shock consequent upon operation, which in fact were due to the disease and to the delay in relieving it. This only serves as a lesson to us that we must not allow these patients time to fall into this condition of profound relapse.

Intestinal obstruction has of course an important bearing upon some cases of a mild type, but this does not justify the delay which is in many instances caused by trying to ascertain by the aid of enema, or cathartics, whether such a state of affairs really does exist.

NON-SURGICAL TREATMENT.

In considering non-surgical measures for the relief of the affection under discussion, I will first make a brief review of its medical treatment. Those who follow the literature of the subject for the first time, will be surprised both at the number of remedies, and at the confidence with which they are put forward. One would almost think that the surgical treatment of this trouble would no longer be necessary, did we not observe at the same time that the death rate keeps as high as ever. There is no doubt in my own mind that the medical treatment of these cases does far more harm than good, and that could all drugs be abandoned and the subject treated as a purely surgical one, many lives would thereby be saved. Because a case that has been injected by atropia, morphia or hyoscyamine has afterwards been reduced, this is no evidence that it was due to the effect of the drug.

Those who operate upon these cases can produce an equal, or larger number who, through having tried these vaunted remedies have lost the valuable time that meant death to the patient.

Muscular spasm as a factor in the production of strangulated hernia, and as something that must be overcome in its treatment, no longer holds a prominent place in the surgical mind, and the sooner it is banished from the minds of *medical* men, the better it will be for those who suffer.

The sooner the entire profession realize that it is as purely a mechanical difficulty, as is a piece of beefsteak lodged in the throat of a choking man, the sooner will prompt relief be afforded those who are afflicted. Delicate and vascular parts are forced out through an opening composed of hard, non-elastic fibrous tissue. At first the constriction may be only sufficient to retard the return of venous blood. The resistance of the arteries being greater, the blood is still pumped freely into the parts, while its return by the veins is obstructed. Congestion results, and the constriction tightens until all circulation is shut off, and death of the part results. With this state of affairs existing, why give hyoscyamus atropia, chloral hydrat., or even opiates, except to alleviate the sufferings of the patient while making preparations to do something more rational? Why not do the only right thing at once? that is, cut the constricting band.

EXTERNAL APPLICATIONS.

I shall not stop to discuss the many external applications that have been credited with great power in reducing strangulated hernia. Heat, cold, poultices, croton oil and other liniments, have all had their advocates, and to faith in each, has some life been sacrificed. Evidence is strong, however, in favor of the local application of sulphuric ether.—Finkelstein claims to have reduced fifty-four out of fifty-eight cases by this means alone. The hips are elevated, the parts exposed to the air and well anointed with sweet oil, then about a tablespoonful of ether is poured over the tumor every ten or fifteen minutes.

It is supposed that the intense cold produced by rapid evaporation, acts not only upon the engorged blood-vessels, reducing their size, but upon the bowel itself. I believe this to be safer and more efficient than taxis in the hands of the inexperienced. I should feel regarding this, as with the use of ice, that it should only be used in the earlier stages, before the vitality of the part has been impaired, and that it should not be continued over a great period of time.

TAXIS.

Dunglison gives the definition of this word as "the operation of reducing a hernial tumor by the continued pressure of the hand"—but I have found that the interpretation of the term by the profession at large, may be anything from the most gentle manipulation, to the mauling and pommeling of the tumor, or even of putting the patient on the floor and jumping on him, as had actually happened to a man who came under my care a few years ago.

In the manipulations known by the term "taxis" we have a power for good or a power for great evil, and I regret to say that as ordinarily used, the one almost counterbalances the other.

None but the most gentle manipulations should ever be used upon a strangulated gut, or even an incarcerated piece of omentum. This should be done mostly before the patient is etherized; the temptation to resort to "brute force" is too great when the patient is insensible to pain. I desire to give here a method for reducing hernia, that has been followed by me for many years. I claim no special originality, but do claim and know that it is not generally used.

Try at the outset to assure your patient that you are not going to add to his torture, and confirm this in his mind by handling the tumor with the greatest gentleness. By this you will secure his coöperation instead of unconscious resistance. Work the fingers of one hand around the neck of the tumor where it issues from the abdomen, holding its bulk in the palm of the hand if possible, and instead of trying to push this tumor back into the abdomen, *try to draw it further down*. Now with the other hand grasp the canal and its contents (if inguinal hernia), gently but firmly between the thumb and fingers, and while making *traction and compression* with the hand that is holding the tumor, manipulate the canal with a "kneading" motion. This can all be done without adding to the patient's pain to any extent, and it will succeed when ruder handling fails.

When you push upward upon a strangulated hernia, usually you carry it up over the edge of the ring upon the abdominal wall, and accomplish nothing more. In the method suggested, by *traction* you lengthen out the mass that is blockading the canal, favoring the effect which you afterwards produce by *compression*, *i. e.*, the partial emptying of engorged blood-vessels, and the displacement of imprisoned gases and fluids. This is further aided by the action of the fingers upon the canal, which tend to work the bowel free at the point of constriction.

This method applies with slight modification to any form of hernia with which we may meet. In enormous inguinal hernia, the pure rubber bandage may be called to our aid in making compression.

In femoral hernia we have a very short canal to act upon, and I have for this reason modified my manipulations in the following particulars:

The hand for *traction* and *compression* is used as before described, the tumor being drawn in a line at right angles with or directly away from the leg. With the fingers of the other hand, the neck of the tumor is "kneaded," and from time to time the abdominal wall immediately above the hernial opening is gently but firmly pressed deeply into the pelvic cavity, by the ends of the fingers carried just over the brim of the pubes.

This pressure deep into the pelvic cavity, displaces the viscera in the immediate vicinity of the internal hernial opening, and doubtless causes some traction upon the bowel from within.

I can recommend these methods of reducing hernia, with every confidence that those who try them, will find them more satisfactory than the usual way of applying taxis.

ANÆSTHETICS.

I shall mention only one more article under the head of non-surgical treatment, and that is the use of anæsthetics. purely as a means of aiding in the reduction of hernia. Here again we are using a two-edged sword; I have not hesitated to place myself squarely on record, as having no faith in the causative action of muscular spasm, and this means that ether merely allows us to use a force, that we would not dare use during the consciousness of the patient. One point in its favor I am willing to admit, it does away with the unintentional resistance on the part of the patient. I believe that an anæsthetic should always be used, but never by the man who is not prepared to cut down and sever the constricting band, before his patient comes from under its influence, in case he fails to replace the protruding parts, by moderate manipulation.

ASPIRATION.

Aspiration is on the line between the medical and surgical treatment of strangulated hernia. I believe that it is more frequently resorted to by the physician than by the surgeon. It is one of those vain hopes resorted to in order to avoid an operation, and one of the means that puts the patient in greater danger if not successful. The puncture of the bowel by the smallest needle when its vitality is already at the lowest ebb, furnishes a very favorable spot for the beginning of necrotic change, and notwithstanding the fact that they belong to a class of cases not fully published, there are enough on record to show that perforation is more likely to occur at just this point, than any other.

In a few instances where the hernia is incarcerated by its enormous size, rather than strangulated by a constricting band at its neck, it may by affording escape to the imprisoned gas, break up the blockade.

It is by no means an innocent measure to be indiscriminately applied.

WHEN TO OPERATE.

In former years there was some question, as to just when it was justifiable to operate, that is, just how far you were to allow your patient to go towards "death's door" before giving him relief. I regret to say that there are still a fair number of physicians who do not feel any alarm for their patients until fæcal vomiting begins, and believe that it is then quite time enough to talk of surgical measures. They fondly imagine that they are acting in the patient's interests by trying everything else, before the knife.

Then again there are a large number too timid to operate themselves, and not conveniently situated to call a surgeon. To these two causes many lives are sacrificed every year.

I look upon delay as by far the most dangerous feature of the case. In thirty-one cases of strangulated hernia in private practice I have lost three cases, and I am sure that two of those might easily have been saved by an early operation.

This good record is due to two causes—First that I have seen the cases early, and second that I have never left my patient until the hernia was reduced.

OPERATION FOR RELIEF.

Few operations are easier to perform than those done upon a recent case of strangulated hernia, before pathological changes have taken place, and few are more complicated after long delay.

The point of constriction in inguinal hernia, in a large majority of cases, is at or near the external ring, and in femoral it is rarely found deeper than Gimbernats ligament. In reaching these points only the most insignificant vessels are divided. The question of opening the hernial sac should no longer be under debate by those doing aseptic surgery.

Except in the smaller herniæ, recently strangulated, safety is on the side of examining the contents of the sac, and knowing by actual inspection that they are in a fit condition to return to the abdominal cavity.

We cannot without seeing, estimate the amount of damage that may be done to a loop of intestine, even in a very few hours. In femoral hernia, I have seen the gut, black, after only five hours' strangulation, so complete had been the arrest of circulation.

Then again within the sac we may have a piece of omentum which has long been outside of the abdomen, and so changed in character as to make its removal safer, than would be its return within the peritoneal cavity. Such hardened masses of omentum sometimes give rise to peritonitis. More than this, they are a very strong predisposing cause of the recurrence of the hernia.

Amputation of the omentum has long added very seriously to the mortality resulting from these operations, first, from secondary hæmorrhage, and second from sepsis. The common method of surrounding a large piece of this fatty tissue with strong cat gut, and then tying, cutting off, and reducing the stump to the abdomen, is dangerous in the extreme. Rapid absorption takes place, the ligature is loosened, and bleeding into the abdominal cavity results. Nothing short of laparotomy will save the patient.

For several years it has been my habit to spread these omental masses out on the abdomen and tie each vessel separately with small *aseptic silk*. I have placed as many as eighteen silk ligatures upon the omental stump. This method has the double advantage of ensuring safety against hæmorrhage, and also of allowing the omentum to spread out in a natural manner in the interior of the abdomen, instead of being held in one mass, as a convenient wedge to redilate the canal at later date. I sterilize my silk by boiling for twenty minutes in a carbolic solution, and it is then kept in alcohol.

The second risk—sepsis, is no longer a very great one with careful operators.

COMPLICATIONS.

Among the complications met with, none are more frequent than adhesions. These are mostly between protruding omentum and the sides of the sac, and are easily broken down. If, however, they are between the bowel and the sac, great care is sometimes required to separate them. It is far better to cut out that portion of the sac adherent to the gut, and reduce it in this way, than to run any risk of tearing the intestinal coat. Before returning the intestine it should be carefully inspected to see that it is not twisted upon itself, or that its surfaces are not adherent. Treves has shown that those who have suffered from strangulated hernia, are more liable to intestinal obstruction subsequently than other persons, on account of these adhesions lengthening out into bands that entangle the intestine. After reducing the bowel, it is well to introduce the finger and sweep it around the interior of the abdomen, to assure yourself that no adhesions exist in the vicinity of the hernial opening.

It is no uncommon thing, even in cases of short duration, to see the bowel of a dark chocolate color, in which cases, after the stricture is cut, the bowel should be kept outside of the abdomen and hot cloths wrung out of sterilized water applied, until a change towards its normal color is observed.

The use of any form of antiseptic solution upon the damaged bowel is strongly advised against, however. Small perforations may be surrounded by a circular stitch and closed. It is true that this narrows the lumen of the bowel, but a considerable narrowing is safer for the patient than resection. Even when there is sloughing demanding resection, it is believed that an artificial anus should be established until the patient has sufficiently recovered to warrant its closure by a secondary operation.

When in doubt what to do with the bowel the safer plan is to leave it outside of the abdomen, if necessary several days. If great shock exist at the time of the operation, or if general peritonitis is established, it is believed to be good practice to flush the abdominal cavity with sterilized hot water, water as hot as can be borne by the hand or even hotter.

OPERATION FOR CURE.

Having relieved the patient of strangulation, it should be our next consideration to protect him, as far as lies in our power, from a recurrence of the hernia. It is true now, as in all times past, that we have no method of cure for hernia that will not fail in a large number of cases. This is due to the fact that the same inherent defect exists in the structure of the abdominal wall, that acted as the predisposing cause of the original hernia. In many instances we cannot overcome this.

Fortunately we can now resort with impunity, to methods of restoring the parts to their normal condition, that were in former years very hazardous to the patient. This fact is leading to a larger percentage of cures and a greatly reduced mortality rate. There are very few instances when the operation for radical cure cannot follow that for the relief of strangulated hernia, without increased danger to the patient.

It is not within the scope and intent of this paper, to consider the various operations at present in use, and I will only say that during the past four years, I have used the operation of Baker, of London, with great satisfaction. This, briefly, consists of cutting off the sac as near the internal ring as possible and then stitching up the canal with heavy braided silk. Union by first intention is secured in almost every instance, leaving the deep silk sutures permanently in the canal. Since I have sterilized and prepared my own silk, I have no trouble about the stitches coming out.

The old routine of giving an opiate to keep the bowels quiet after operations for strangulated hernia is believed to be bad practice. Opiates are seldom called for to relieve pain, and should never be given for other reasons.

It is not an uncommon occurrence, that the loop of bowel which has been subjected to constriction, is in a state of temporary paralysis, when it is reduced to the abdominal cavity. Fæces collect at this point, and not only increase the danger of perforation, but if they become hardened may cause intestinal obstruction.

It is believed that the early administration of a mild saline cathartic, not only tends to prevent accidents of this character, but that it relieves the congestion of the bowel more promptly, than if left unaided.

In closing this brief, and necessarily incomplete consideration of a very extensive subject, if I have not shown my belief in the following propositions, then surely I have fallen far short of my desire.

1. That the death rate from strangulated hernia, is unnecessarily excessive.
2. That medicines, and external applications are dangerous, in that their use *often results in delay*, allowing destructive changes to take place.
3. That the operation for strangulated hernia, *if done early*, is neither a difficult nor a dangerous one, and affords immediate relief, from one of the most distressing and alarming accidents to which mankind is liable.

THE TREATMENT OF COMPOUND FRACTURES.

Read in the Section of Surgery and Anatomy at the forty-third Annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY W. H. MYERS, M.D.,
OF FORT WAYNE, IND.

The injuries of bone are classified as: simple fracture, compound fracture, complicated fracture.

What are the indications when called to treat a case of compound fracture?

To arrest the hæmorrhage, as far as possible; to render the wound aseptic, and to prepare to set the fracture.

The second indication: to keep the bones in normal position. The third indication: to conduct the case so as to prevent putrefaction, and to remedy septic infection when it has occurred.

I suppose we all admit the cause of putrefaction to be, the presence of microörganisms which enter the wound from without, and that the putrefactive fermentation of the discharges leads directly to septic infection; hence, any essential part of the treatment of wounds must be to prevent the entrance of these organisms.

To conduct a case so as to prevent the changes referred to we must ever bear in mind that germs are living.

All living things require certain conditions for their growth and development, vitality their poison. non-vitality their food.

We interfere with their growth and development by the use of antiseptics, a successful interference will give us an aseptic wound. The methods of interference may be stated as follows:

1. By removing the germs before they have had time to do harm, by washing out the wound.
2. By removing the soil in which they grow, by free drainage.
3. By rendering the soil inert; this may be done by constitutional treatment, by general and local rest, and by keeping the patient in as perfect health as possible, thus increasing the vitality of the tissues.
4. By preventing the deposit of the germs; this may be done by absolute cleanliness of the hands, instruments, ligatures, and by irrigation.

In support of these statements I shall quote McNamara, who uses the following languge: "I believe that with ordinary care we can prevent putrefaction and suppuration from taking place in cases of compound fracture by Mr. Lister's system of dressing." Also a quotation from Dr. David W. Cheever, of Boston: "The majority of compound fractures now are made aseptic and continue so, healing without amputations, formerly so common."

I now offer in support of the foregoing statements the following statistics:

Mortality of compound fractures during the pre-Listerian period.

Baum in Gottingen lost	38	per cent.
Billroth in Zurich lost	38.7	"
Billroth in Breslau lost	40.5	"
Billroth in Halle lost	40.6	"
Billroth in Bown lost	41.8	"

Under the Listerian treatment Professor Volkmann has 75 cases of compound fracture without a death.

Lister, Volkmann, McEurn, Bardenhuer and MacConnac report 530 affected with 1,072 compound fractures, and of these only three died. In discussing the treatment of compound fractures I shall only refer to immobility of the use of plaster paris, bone-grafting or transplanation with a case, and the question of amputation.

John Hunter said: "The first great requisite for the restoration of injured parts is rest." Complete rest, absolute repose. With a clear apprehension of these great principles, and a minimum of subsequent interference after *immediate* reduction, a good result will ensue. I have for more than ten years treated compound fractures upon the same principle as I do simple fractures if called early to see the case, and if the blood supply be not so largely interfered with as to cause gangrene. After thoroughly cleansing the entire limb with soap and water, and afterwards using a five per cent. solution of carbolic acid, for the same purpose (anæsthesia with ether), I close up the wound with protective, seldom using sutures, dusting the part with iodoform, also the adjacent skin; I then apply four or five thicknesses of bichloridized gauze and a layer of carbolized cotton, and complete the dressing by plaster paris bandages to give the needful support to the limb. These are applied spirally until every part of the limb and wound are covered by four or five thicknesses. Drainage I do not employ. If the fracture is below the knee I elevate the foot. I allow this dressing to remain fourteen days or even longer, unless thermometric indications present themselves for its removal. I would only then remove the dressing because of the subsidence of the swelling. The advantage of the dressing is, that the bandage applied in such a soft and pliant state as to accurately adapt itself to the limb affords a firm and even support when the plaster hardens. We thus secure perfectly immobility, muscular spasm is prevented, and with it absence of pain.

Infrequent dressing is a corollary of that fundamental principle of absolute rest during the healing process. This principle is not new, for Bellaste, in 1707 said: "I only dress a wound *infrequently*, convinced that we must give nature leisure to act in re-establishing wounded parts in their former state." The elder Larrey shows how far he carried the principle of immobility, and how little he cared to examine and dress wounds in soft parts by his treatment in the following case: "This soldier whose arm I amputated at the shoulder joint, during the terrible battle of Moscow, in 1812, at my request set out immediately on his journey homewards, without ever having the stump dressed, in accordance with the assurance that I had given him at his departure that he would not need it."

I assert the ideal wound dressing in a case of compound fracture to be that which affords perfect rest, *absence of tension with antiseptic protection.* Now contrast a simple with a compound fracture. To the question what is a fracture, Agnew replies: "It is defined to be a solution of continuity in the fibres of a bone." I answer, it is much more than this. Vessels are ruptured, periosteum torn, the sharp and irregular fragments wound the overlying tissues, blood is extravasated, the soft parts contused, and yet, so long as the skin is unbroken, no serious consequences will follow. The simple fracture, so called, if properly adjusted, unites easily and quickly without pain or fever. Why does this not occur in a compound fracture? Why have we fever, pain and extensive suppuration in one and not in the other? It is now proved that these consequences depend upon putrefaction of the wound secretions, and that the putrefaction itself depends upon the presence of minute living particles in the atmosphere. Now, if by the use of germicides we can prevent these changes from occurring as already stated, why not, as a result, the compound fracture heal as a simple fracture. This result I attempted to obtain by the treatment before referred to.

That the roller bandage has been objected to I am well aware. I will refer to two cases that are classical, the one reported by Albucassis, the other by Sir John Bell.

The case of Albucassis, the melancholy story of the black eunuch belonging to one of the princes of Arabia, who having fractured his leg near the ankle-joint, had it bound up very firmly with compresses and above the wound. Strict instructions were given not to undo the rollers; from the stricture of the bandage there came on gangrene of the limb. In 1801 John Bell remonstrated against rollers and referred to a boy having a compound fracture of his arm, he says. "the surgeon to whom I referred the case bandaged the fracture with a roller, and at my morning visit I found the fore-arm bound more firmly than a mendicant's leg, the black skin appeared through the interstices of the roller, and the arm fell into total gangrene." In almost every book on fractures since 1801 we have a graphic description and representation of the gangrenous arm referred to by Bell, and the leg referred to by Albucassis. These cases were the result of constriction and not of compression. It may be well to clearly apprehend the distinction between constriction and compression. The first is hard, sharp and painful, it strangles and destroys, while the latter comforts and repairs, it is elastic, soft and gradual; it soothes an injured part; it conduces to healthy innervation and circulation; prevents inflammatory effusions; promotes absorption and controls muscular contraction. In fact it enables us to turn the blood serum, and what would otherwise be waste substance and a danger to the patient, into materials by means of which the reparative process may be quickly effected in the injured tissues.

Amputation.—The treatment of wounds has undergone such a complete revolution that we are compelled to re-cast the doctrine of amputation in compound fractures. Too many limbs are sacrificed by a too hasty resort to the amputating knife. The "knives-men" are still abroad in the land and I regret to say that many of them are found along our railway lines. These have failed to notice that conservative surgery has been carried to a point formerly deemed impossible. MacCormac says: "The great improvements introduced of late years in the manner of treating the wounds have now rendered it practicable to save many cases—even of the most serious injuries, cases of compound fracture for example, and wounds of joints—from the mutilation which amputation of necessity entails."

Wyeth "The present rapid advance in the science of surgery and the greater perfection in its art declare that the time is not far removed when amputation for other causes than gangrene will be comparatively rare."

A surgeon should always remember in deciding whether amputation shall or shall not be performed that upon his decision depends the future of the patient, whether he shall be a comparatively helpless cripple or perhaps be sentenced, himself and family, to pauperism, deprived of the enjoyment and comfort of the performance of those movements which are held in estimation only second to life itself.

Dr. George K. Johnson,
Surgeon-in-Chief, G. R. & I. R. R. Co.,
Grand Rapids, Mich.

Dear Sir:—I herein report the case of Paul Ribble, employed on the G. R. & I. Railway. He was injured on the 26th of May, 1890. The car being loaded with heavy lumber, the brake being defective, would not catch, and when the car upon which he was collided with the forward part of the train, the lumber slid forward, a board catching his leg and forcing it against the brake-staff, producing a compound comminuted fracture of the left leg; the tibia was comminuted, and the fibula sustained a fracture. He was conveyed to the St. Joseph Hospital, and placed under the influence of ether while his leg was dressed. The tibia was carried away for the space of 2½ inches; the upper and lower ends presented the condition known as dentated. Passing my finger deep down in the wound, I found pieces of the tibia entirely detached from the periosteum. These pieces (four in number) I removed; one large piece 2½ inches long, spear-shaped at both ends, and three smaller pieces. After placing them in a basin containing a warm solution of carbolized water, the limb being carefully cleansed and placed in its normal position, while firmly held, I placed the bones as nearly as possible where they belonged. I dusted the part with iodoform, placed protective over it, then a sheet of carbolized cotton, and over this six or eight layers of bichloridized gauze; over this a thin bandage to retain everything in place. I now proceeded to place over all the immovable dressing, using for the purpose a plaster of Paris bandage; this hardened in thirty minutes.

The dressing was allowed to remain twenty-eight days without interference. During this period the pulse remained 75, —never varying, and the temperature at no time deviated from 98.5°; sleeping well, free from pain, appetite good, cheerful and contented during all this period.

June 23, at 2 P.M., I proceeded to remove the dressing, cautiously avoiding all unnecessary movement. The wound was healthy, not one drop of pus; granulation had extended over all the replaced pieces of bone, except one small fragment, which presented a white surface. Union had progressed so far that the fibula was intact, and the tibia, at the point of fracture, was firm beyond my expectation; no swelling nor abscess presented itself; the largest piece of bone had disappeared beneath the granulating surface.

July 7, 1890, I removed the dressing for a second time. I found the wound in the soft parts filled up and firm union of the bone, the replaced pieces remaining, but still somewhat visible. The smaller piece visible at the first dressing much lessened, and the larger piece disappeared; no pus nor abscess present.

I may add the piece of bone next largest in size was not entirely covered by granulations.

Pulse and temperature normal, appetite excellent, sleep undisturbed. The patient's condition all that could be desired: so far not one untoward symptom has presented itself.

Dr. Ricketts, of Cincinnati, said he had read two papers in which he took the ground that in cases of doubtful fractures the surgeon had the right to make the exploratory incision. If, in a case of compound fracture, we can return the dislodged bone and have union, there is no reason why, if there be two or three fragments, the surgeon should not cut down and wire them together. If we are clean there is hardly any limit to what we can do. He was glad to know that Dr. Myers did not use wire in his case, but he thought that in the majority of cases silver wire should be used to hold the pieces in position. The question of operation is a difficult one in railway surgery, where the medico-legal considerations are so great.

Dr. Edwin Ricketts had heard some surgeons say that the bones will not unite if the periosteum is not in place. He could not understand why this should be, if in abdominal surgery portions of the peritoneum are taken off and nothing thought of it.

Dr. North, of Michigan, said he had seen a great deal of railroad surgery, and he strongly advised against the use of the knife if it can be avoided, even if the products of ulceration flow out of the wound. Even a year afterwards an operation can be successfully performed, if necessary.

Dr. Ricketts, of Cincinnati, added that in operation on the skull, the button of bone is returned without the periosteum, and union takes place.

Dr. Griffith stated that he had used decalcified chips of bone and had bone develop from them, and he did not think the periosteum was necessary.

Dr. McCaul, of Michigan, reported a case of trephining in which he returned the button without the periosteum, and the wound is perfectly sealed to-day.

Dr. Emmett, of Iowa, thought there was no longer any question as to bone grafts growing. He had seen cases in which Senn's decalcified bone grafts were used with perfect success.

The chairman, Dr. Gaston, stated that his observations in this line confirmed the views to which he had just listened. He related a case of extensive suppuration along the tibia, denuding two-thirds of the anterior part of the bone of its periosteum. Amputation was proposed, but it was decided to wait, and to-day the case promises complete recovery.

Dr. Emmett related a case of which he had read, in which a patient with a seriously injured foot was advised to have it amputated, but refused. Gangrene set in and the leg had ultimately to be amputated above the knee. The man sued the physician for damages, on the ground that it was the physician's duty to use his own judgment. He won the suit and the Supreme Court sustained the decision, saying that the surgeon was liable for damages, as the patient could not be supposed to know whether amputation is necessary or not.

Dr. North inquired as to the course to pursue if, in spite of every treatment, non-union continues.

Dr. Duffield, of Detroit, stated that if the Supreme Court of the State of New York decides that a patient can say that he will not have his limb amputated, and then holds the surgeon responsible for not operating, the surgeon occupies a peculiar position. He had always contended that the patient should decide. The best way is to call counsel, tell the patient their decision, and if he refuses to abide by it, let him get another surgeon.

Dr. Ricketts, of Cincinnati, replying to Dr. North, stated that mercuric chloride in large doses internally would cause union of the bone.

Dr. Myers said that he has had good results from sawing off the extremities of the bone and nailing them together. He had seen Mr. MacEwen, of Glasgow, after trephining, break up the button into small fragments and replace them. He thought it would always be better to replace any fragments removed, and recalled a case of trephining in which he did not replace the bone, and now, eight years after, there is a concave surface which is making pressure, as is shown by commencing paralysis.

Dr. Ridlon, of Chicago, speaking of non-union, referred to two cases of compound fracture in which non-union persisted in spite of all the numerous plans tried. His plan was to put the limb in position and hold it there, preventing motion laterally and longitudinally, and then constrict the limb above the point of injury by a band, producing œdema about the injured part. The legs were allowed to hang down, and in both cases union was perfectly solid. Eighteen months and a year respectively elapsed between the injury and this treatment. Thomas reported forty cases so treated successfully.

Dr. Milton, of New York, related a case of non-union cured by the patient being allowed to use the leg.

Dr. Graves, of Michigan, thought that cases of non-union were really cases of delayed union. He had seen many cases in which the bones took months to unite.

Dr. Smith, of Michigan, believed that the upright position, together with getting the patient out into the fresh air, materially helped cases of non-union.

The Chairman reported a case of non-union cured by forcibly rubbing the ends of the bone together so as to excite inflammatory action.

GUNSHOT WOUNDS OF THE BRAIN.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 8, 1892.

BY C. E. RUTH, M.D.,
OF KEOKUK, IOWA.

Gunshot wounds of the brain have always been considered almost of necessity fatal, and when we review the surgical history of our late war and find among hundreds of brain wounds, that not more than ten cases made partial or complete recovery, we need not be surprised to find the general concensus of medical opinion to the effect that nothing could be done in those cases but to make the patient as comfortable as possible, while the fatal result was confidently awaited.

Less than ten years ago, I have heard leading surgeons stand before medical classes and say, when a missile has entered a cavity, never explore for it. None would think of following that advice in regard to the abdomen to-day. We may not hope to accomplish, in gunshot wounds of the cerebrum, as much as has been or can be accomplished in abdominal gunshot wounds. Yet I think there is evidence to prove that cases in which missiles have entered or passed through the brain, are not necessarily so hopeless as has been believed. Many do not die immediately, and when they do not, they are entitled to as much consideration and effort to spare their lives as for other grave injuries.

All our standard authorities on surgery, which I have seen, except two, Wyeth and Treves, agree that we are not justified in attempting to follow a ball that has entered the brain. That its track can not be followed without doing more damage to the brain than the missile would do if left alone. That the finding of a ball that has entered the brain is simply a piece of surgical good fortune or accident, and not due to the operator's diagnostic or operative ability.

The advance ground that Wyeth and Treves take seems to be based wholly on the case of Fluhrer, in Bellevue Hospital, in 1884, in which he followed the track of a ball some distance into the brain and removed a trephine disc from the opposite side of the head from the point of entrance, at a point slightly below the spot he expected the ball to have struck, and found the ball imbedded in cerebral tissue and removed it.

Case 1.—March the 3rd, 1891, I was called by Dr. F. L. Darrow, to see E. C., aged eighteen, who had been shot sixteen hours before by a thirty-two calibre pistol at short range. The ball entered at the outer canthus of the right eye, through the frontal process of the malar bone, and passed upward and backward into the brain. From the position of the parties concerned in the shooting, appearance and course of the wound through external soft and osseous tissue, the course of the ball through the brain was towards the opposite parietal eminence. The only symptoms of compression were slight slowing and irregularity of the pulse, which disappeared on the removal of a coagula occluding the wound and discharge of cerebral tissue and fluid blood. Temperature, pupils, motion, sensation and coördination were normal. For two weeks he remained rational, slept and ate well, pain slight. At the end of that time he began to show evidence of septic trouble with pyrexia of moderate degree, followed by anorexia and rapid failure of strength. The wound had not been allowed to close, but not being satisfied that the drainage was as complete as it should be, I carefully introduced a director four inches, and replaced it with a drainage tube. The director did not pass in the direction I had mapped out for it towards the opposite parietal eminence, but at an angle to its line of incidence of about thirty degrees. Noting no improvement in his condition, two days later I introduced a drainage tube six inches without any marked resistence. I did not know how much resistence a normal brain should offer, but was satisfied that the force I had used was so slight that I was certainly in the track of the ball. Still noting no improvement in his condition, but on the contrary rapid failure, I was satisfied that there was a pus cavity about the ball and determined to go still deeper for drainage purposes, and passed my director, and afterward drainage tube to the skull behind. The case by this time was so desperate that no time was to be lost, as he might apparently die at any time, I determined to try and find the ball. I shaved the occiput, carefully passed a gum director until it was resisted by the skull posteriorally and with a straight edge sighted the projecting end of the director vertically and horizontally, and drew a line across the occiput at right angles to the projecting portion of the straight edge in both positions. The point where the lines crossed I expected to indicate the position under which rested the point of impact of the bullet, and the tip of the director. On removing a half inch disc there was a discharge of pus to the amount of one to one and one-half ounces through a hole in the dura mater made by the impact of the bullet, and the mark of the bullet was plainly shown by a lead deposit on the inner side of the disc.

The center of impact was missed by the center of the trephine disc not more than three-sixteenths of an inch. The disc was removed at the junction of the parietal and occipital bones, one inch to the right of the median line. A drainage tube was passed entirely through the middle and posterior lobes of the brain on the right side and irrigation practiced twice daily with sterilized water and hydrogen peroxide. Appetite improved and pyrexia grew less for four or five days, during which time he was perfectly rational, but the improvement was not maintained and he died from exhaustion ten days after the operation and thirty days after the shooting occurred. The ball was procured at a dressing a couple of days after the operation. The ball being free in the abscess which formed around it made it impossible to procure it at the time of the operation without destroying normal cerebral tissue, or the removal of another trephine disc to procure more room. His condition was not such as to warrant further operative interference at that time. Unfortunately no post-mortem could be obtained.

Case 2.—May 4th, eighteen hundred and ninety-two, was called to see Fred. S., German, aged eighty, who had shot himself about thirty-six hours previously with a thirty-eight calibre pistol. The ball entered one-fourth of an inch to the right of the median line of the frontal bone and one and one-fourth inches above the supra-orbital margin. Bleeding had been profuse but had entirely ceased before I saw him. A few hours after the injury he appeared for a time quite rational and talked some. When seen by me his pulse was one hundred and eight to one hundred and twenty, of fair volume, respirations irregular and semi-comatose. Left eye normal, right palpebral tissues greatly swollen and discolored from hæmorrhagic extravasation, the eye markedly more protuberant than its fellow, and pupil insensible to light. I increased the size of the external wound and removed burnt and discolored tissue from its margin, together with a small bullet fragment. On opening the wound there was a small hæmorrhage which carried out some loose cerebral tissues. A three-sixteenths of an inch porcelain-tipped probe passed readily along the bullet's track downward and backward through the frontal sinus into and through the anterior inferior portion of the first frontal convolution, through the junction of the ethmoid, frontal and body of the sphenoid bones on the right side, and lodged beneath the pharyngeal mucous membrane behind the right posterior nares, from which it was readily removed. A drainage tube was passed through the wound and allowed to remain. He survived the shooting sixty hours and was semi-comatose after the first ten hours with involuntary fæcal evacuations and urinary retention. The gravity of the injury in one so old, enfeebled by insufficient food. extremely un-hygenic surroundings before and after the shooting, makes comment on the result unnecessary. There was not the slightest difficulty in following the ball through the cerebral tissue, the resistance being ample to enable me to determine that the probe was following the bullet's track.

Case 3.—In the *Vis Medicatrix*, published at Des Moines, Iowa, February or March, 1892, Dr. Conniff reports the case of a man on whom he held a post-mortem and found a conoidal ball weighing one hundred and twenty-six grains lodged in the left posterior lobe of the cerebrum. It had passed through four or five inches of bone and soft tissue before entering the brain, and was so far spent as not to be able to reach the opposite side of the skull from this point of entrance, and probably had nearly or quite all of the grease and dirt removed before it entered the brain, and was carried twenty-nine years, the patient dying from other causes. This is, I believe, the longest period which any man has carried a ball in his brain and retained a moderate degree of physical and mental ability. Yet he complained of great pain throughout a considerable of the period, and always claimed he could feel the ball in his brain.

War histories, thus far, are of but little aid to us in determining what should be the mortality of gunshot wounds of the brain, for feeble, if any attempt, has been made to treat such wounds aseptically. In our surgical history of the Rebellion, statements are made to the effect that the wound was healthy and suppurating nicely when applied to wounds of the brain, while now there is scarcely a surgeon to be found who does not prefer to have all wounds heal without pus formation. The case of Fluhrer, as well as my cases, prove that a ball may be followed through the brain and in some cases removed. When a ball enters the brain, it may confidently be expected to pass through the cerebral mass in a straight line until it strikes bone, lodges by the resistance the cerebral tissue offers, or is deflected by the falx-cerebri or tentorium. If the missile takes a straight course through the cerebral tissue, all instruments, probes, directors and bullet forceps should be straight, so that the position of their tips may be accurately known, and it will be wise to have them graduated on the shaft, to enable the operator to determine the degree of penetration, and being straight, if the ball be deflected at any point, it will be shown by the probe or director persistently hugging one side of the wound of entrance, to enable it to make the curve and follow the course of the projectile, thus indicating the direction of deviation, and when that is known its extent may be determined by bending the shaft if a suitably tipped probe be used.

In Treve's "Operative Surgery," just published, the statement is made that "the chief end effected by the surgeon in a large number of cases consists in providing free drainage and not in removing the foreign bodies, the presence or position of which is uncertain. It is a question which can do the more harm, a motionless bullet (which may in time become encysted), or a probe driven hither and thither through the brain substance."

He advises the use of an aluminum probe, as advocated by Fluhrer, and states that it must be allowed to pass by its own weight alone. There can be no excuse for thrusting a probe in any direction through normal brain tissue in the search for a ball. If the probe be of proper size and shape, it will give a definite and readily appreciable resistance before making a false passage. I am aware that this may be thought altogether too sweeping a statement, when the general opinion among medical men is to the effect that cerebral tissue cannot offer resistence to a probe sufficient to be appreciated by the touch, "except it be especially skilled," as one authority puts it. It would appear to be a very difficult matter to find a man specially skilled in this department. I found by careful test of many sections of brain in which post-mortem changes had not softened it, and no hardening fluid had been used upon it, that a hemisphericaly tipped probe of one-fourth inch diameter, required from two and one-half to three ounce weight to produce penetration, and one and three-fourths to two ounces to cause it to pass between the convolutions. This sized tip is sufficient to use in following any ball from thirty-two calibre upward, with a resistance to penetration that a very unskilled touch ought to appreciate, and if he cannot, he can hang on weights within safe limits, or abandon the case to some one better suited to the work, instead of trusting to his extremely uncertain touch. A three-sixteenth of an inch probe will require, under the same conditions, from one to two ounce weight to cause penetration of sulci or normal cerebral tissue, and will answer for all the small rifle balls, but both should be porcelain tipped for obvious reasons, and be carried by a small aluminum shaft, so as to give the least possible weight to the probe, and as slight lateral friction as possible to the collapsed canal, that all the resistance can be appreciated by the hand manipulating the probe, and not to be compelled to take up an appreciable part of it in resisting weight, and to have as nearly as possible all of the resistance at the probe's tip.

The external wound may give but a poor index of the course the ball takes through the brain, even though the individual shot and the one doing the shooting at the time the weapon was discharged may be known with a fair degree of accuracy. All men who have given the subject any attention, know that after a ball of any ordinary calibre passes into or through the brain there is a collapse of the walls of the track to complete filling by débris and normal cerebral tissue that has prolapsed into the track of the projectile.

Wyeth states that a gum catheter, presumably one such as is used with a stylet, a few sizes smaller than the missile, was as good a probe as could be procured. It would give more resistance to penetration than the ordinary probe. The principal objection to it is that the tip is frequently imperfect, that the shaft is the same diameter as the tip throughout, and the collapsed bullet hole produces more and more friction and consequent obstruction to the advance of the probe. It follows that before the probe advances far, the resistance may be so multiplied that it is impossible to determine whether your resistance is at the tip of the probe or in the lateral walls. Such at least has been the experience in my hands in one experimental case, in which, for the above reasons, I made a false passage. Yet in the first operation I made on the living subject and followed the ball successfully, I used a gum catheter with a stylet to keep it straight.

If a ball be completely flattened and far spent, its course may be like a boomerang through the brain; but such balls will seldom enter the brain at all, and all others will take a straight course.

As an aid to accuracy in locating the nearest point on the scalp to the tip of a probe which had been introduced along the ball's track in the brain, I had a straight bar made ten inches long with two points three and one-half inches long projecting in the same line at right angles to the bar, one point being curved and adjustable, so that when it was placed over the head it could be adjusted to the size and shape of the head; and the bar sighted, with the projecting end of the probe the same as though it were an ordinary straight edge; and with one end projecting by the side of the probe and the straight bar over the top of the head sighted with the probe, a mark may be made by the side of the opposite point which must pass over the tip of the probe, and by repeating the sighting over the skull ninety degrees from the former point and again drawing a line as before, the lines must cross each other at right angles, and the point of crossing will mark the position of the tip of the probe if the sighting be accurately done. An ordinary straight edge may be used as previously mentioned, yet this is quite an aid to additional accuracy.

If the ball strikes at right angles to the surface, or within fifteen degrees, and does not penetrate, the missile will probably lodge at the point of impact or within one-half inch of said point, and will but rarely rebound. Accepting Fluhrer's statement that a ball would rebound, I was surprised to find after firing balls into skulls, and they did not produce penetration of the opposite wall, that they remained where they struck or glanced, but did not rebound. In rare cases they re-penetrate the brain after striking the opposite bony wall; but they almost invariably do it by glancing from the point of impact, at angles to the line of incidence of more than ninety degrees. I could on no account consider that a ball rebounded, unless it re-penetrated the brain by passing back from its point of impact, at an angle to the line of incidence of less than ninety degrees.

Not finding skulls sufficiently numerous on which to experiment, I had a hemisphere made of sheet steel with every possible facility made for aiding in causing bullets to rebound, and fired twenty-two, thirty-two and forty-four calibre shots into it at all angles; and in all the varying velocities which the bullets would stand, from slight deformity to complete flattening of the balls. I had no bullet rebound that was not flattened at least one-third, and a velocity which will produce one-third flattening will nearly always produce penetration of the skull. In those which did rebound it was in varying degrees from almost the exact line of incidence to near a right angle. The distance which a ball will move from its point of impact after passing through the brain must depend upon its velocity, angle of incidence, the surface of contact, and shape of the ball. Unless the force of impact be great, the dura will not be cut, but will brobably be congested and the ball may remain between the dura mater and the brain. There can be no objection in any such case to opening the skull opposite to the point of entrance at the point of secondary impact of the bullet, and establishing drainage and removing the bullet if it be accessible. *Whether the bullet be found or not, we can expect no* harm to come from the trephine hole which will probably prevent the formation of an abscess around the bullet, and its destroying the life of the patient. as it did in my case, after the boy had shown himself capable of recovery from the damage done to his brain in the missile's passage: but he could not recover from the abscess and cerebral traumatism, and the abscess could not drain through the entire cerebral mass along a collapsed bullet hole.

Had I removed the disc earlier, the ball would have been readily found, the track of the wound could have been drained, and the formation of an abscess around the ball, or at its point of impact, made an impossibility. After a ball has traversed the brain until it strikes the opposite bony wall, if by glancing or rebounding it is again caused to penetrate the brain, it can be expected to do so in a straight line from its point of impact, and may be followed in its secondary track to its point of lodgment, with as much ease through a trephine hole as it was originally followed from its point of entrance to where it was deflected from its course. Should it strike with considerable velocity at an angle to the horizontal of less than thirty-five degrees it may sweep around the skull in close contact with the bone for a great distance, passing probably between the dura and piamater, and leaving but little evidence to show the track it took. Occasionally balls are so far spent as to lodge in the brain at some point after gaining entrance before reaching bony resistance, and again after deflection, when it becomes necessary to remove them by some means.

I found I had no forceps at my disposal which could be operated through so small a space as the average bullet hole, without lacerating the cerebral tissue. So I had Truax & Co., construct me a bullet forcep which could be operated through a cannula smaller than a twenty-two calibre pistol ball, and yet the jaws be opened wide enough to grasp firmly a forty-four to fifty-five calibre ball. The jaws are operated on the same principle as is used in some vertebrated or flexible œsophageal forceps, but the shaft is straight and not flexible, so as to enable the surgeon to determine with certainty the position of its tip. I find that it requires considerable experience and manipulative dexterity to readily grasp and hold a missile in so soft a tissue as the brain without doing damage to the surrounding brain substance. I would not recommend anyone to attempt to grasp a bullet and extract it from the brain of the living, unless he had some experience in the work on the cadaver. I would not advise the use of a trephine less that three-fourths of an inch in diameter for removing a disc over the point of impact of a bullet, as it gives insufficient room for examination with the finger or further operative interference; unless another disc be removed, which requires considerable additional time, or the opening be enlarged by the rongeur. I have been able to trace no evil results to the use of the rongeur, yet in my experience with it I have been compelled to separate the dura-mater from the bone for some distance beyond the bone gnawed off; and should the wound suppurate, it makes a point difficult to drain and increases the liability of an unfavorable issue. A large disc can be removed almost as quickly, easily and safely as a small one, and if it be removed with as complete knowledge as is obtainable of the direction the ball will take from the point of impact (if it moves at all), will probably give ample room for all further operative work in that case. The disc should not be replaced for reasons apparent to all. Cerebral localization is usually of little use in cases of this kind, except rarely when abscesses form, and then it is too late for operative measures to save but a very small per cent. of cases. If the ball be small, and especially if it be round, has passed through considerable tissue before reaching the brain, so that one may be tolerably certain that it carries in no grease and dirt, and no symptoms develop, it may be allowed to remain, otherwise it should be followed and removed if possible. In a majority of the cases pieces of bone will be broken off and carried into the brain and lodge at various points along the bullet's track, and they should be removed when accessible, as they must of necessity act as foreign bodies, producing considerable irritation, and probably suppuration to aid in disposing of them. Re-penetration of the brain by a glance or a rebound can be expected to occur but once. The ball will pass almost invariably in a straight line from where it glanced or rebounded. *There exists a necessity for trephining but once,* unless it be necessary to trephine at the point of entrance, for the purpose of giving more room for elevating depressed bone.

The operative rules laid down in standard authorities regarding the enlargement if need be of the wound of entrance, removal of spicula of bone, trephining, etc., are too complete to justify an attempt on my part to improve on them. I have purposely omitted from this paper the tiresome details of the experiments I have made in this work, and if necessity require it, I may at some future time place them before the profession.

SUMMARY.

1. That a ball can be followed in its course through the brain.
2. Having been followed to its point of impact on the opposite side of the skull, a trephine disc should be removed, drainage be established and the ball removed if possible.
3. That the probe is best which gives the greatest resistance to penetration with least possible lateral friction on its shaft by the collapsed canal.
4. That hemispherical front, porcelain tip, and aluminum shaft answers the indications for lead detection (resistance if of proper size, weight, etc.,) required in a probe, better than anything else.
5. That one intending to follow balls through the brain should thoroughly familiarize himself with the resistance the normal brain offers to penetration by the probes he expects to use, that he may know when he is applying force within safe limits.
6. That he should frequently grasp and remove balls and pieces of bone with the forceps of his choice on the cadaver, before attempting it on the living human subject.

REPORT OF A CASE OF TALIPES EQUINO VARUS.

Read before the Section of Surgery and Anatomy at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY B. MERRILL RICKETTS, Ph.B., M.D.,
OF CINCINNATI, OHIO.

W. D., a typical Kentucky lad of fourteen years of age, consulted me on Sept. 1, 1891, having suffered from time of birth with talipes equino varus in a most aggravated form.

The foot was turned straight backward, so that the weight of the body came directly upon the astragalus. This state of affairs necessarily caused the plantar surface of the foot to be thrown upward to such a degree that the under surface of the toes was the only part that touched the ground while standing erect.

The left foot, he said, was at the time of birth, as greatly deformed as the right, but by rubbing and manipulating it by those having him in charge, cured it.

I found upon examining the left foot that the ankle joint would allow of more motion in all directions than a normal joint should admit, thus proving to my mind that there had, at one time, been some deformity of the left foot.

However, this boy was able, with an ordinary pair of shoes, to romp and climb the hills as fast and easily as could his ordinary companions. With this ability to enter into the sports, he had the sense of pride which is possessed by all Kentuckians, and was willing to undergo almost any amount of suffering to have the deformity corrected.

I advised an operation, and after some explanation obtained the boy's consent to operate. Chloroform was used as the anæsthetic, and the operation was made on Sept. 2, 1891, at 10 o'clock A.M., in the following manner:

A Barton's bandage was applied to make the operation a bloodless one. An incision was made upon the external aspect of the instep, about two inches in length, extending from the lower end of the fibula in the direction of the lower end of the tibia, which brought me upon the ligaments and tendons connected with the joint.

I did not divide any of these tissues, merely crowding them aside so that they could not be injured in the process of extracting the bone, which I thought would be difficult.

The astragalus was found to be hard and much deformed, so that its outlines were very indistinct. However, there was but little difficulty experienced in dividing the bone, it being found impossible to extract it without dividing the ligamentous tissues and extending the cutaneous incision, both being steps which I wished to strenuously avoid. After removing the bone, I endeavored to bring the toes forward, which, however, was not very successful, as the tendon Achilles was almost obliterated, the little remaining being very dense. I found it necessary to divide all of the tissues posteriorly before the first could be brought forward in a normal position. When the foot was put in this position, the plantar facia was found much contracted, so much so that I divided it completely. The normal position was maintained with straps passed under the foot in close proximity with the toes, and made fast to hooks woven in a plaster extending from the middle of the thigh to below the knee. This proved to be a great error, as the pressure was so great from the tendency of the toes to turn backward, that a slough ensued, which complicated matters very much.

At the end of the fourth day the strap was removed, its damage not having been detected before this time. The operation was made under hot filtered water irrigation, and the dressing of the same character.

The patient recovered from the effects of the anæsthetic, but suffered a great deal. Although drainage was not provided for in this case, I would not fail to use it in another. Every time I have failed to make this provision regret has followed. It was found necessary to open an abscess on the top of the foot, under the hard callous, which had been formed by walking on it, which was at one time the sole of the foot.

Peroxide of hydrogen and water irrigation were extensively used, and the temperature remained less than one hundred after the tenth day, it previously having reached on one occasion one hundred and four. His recovery was now uninterrupted, the foot keeping its normal position without support. He was on crutches at the end of the fourth week, and left the hospital at the end of the tenth week, with but a small sinus which has since healed, as stated in a recent letter from him. A shoe is worn, and he now goes about without the use of crutches. I have not learned of one so old as this lad being operated on in this manner (removal of the Astragulus).

In my mind it is the most desirable operation to make in a certain class of talipes, that class including those cases where tenotomies give but little promise. The slope of the foot is preserved; the joint more useful, with comparatively no more danger.

The tibia is made to rest on the os calcis by the removal of the bone, the shape of which has been changed to such a degree that it will never allow the sole of the foot to rest evenly upon a plane.

AMPTUATION OF SCROTUM AND CIRCUMCISION.

(Referred to me by Dr. Garner, of St. Joseph, Mo., August 9, 1890.)

Mr. F. P., æt. 22 years, white, United States, active mind and in fair physical condition. Height 5 ft. 8 in., weight 130 lbs., brown eyes and dark brown hair, and of a nervous temperament.

He was free from syphilis, and with no predisposition to tuberculosis. Drinks tea and coffee, occasionally indulging in a glass of beer or wine, and is an inveterate cigarette smoker.

He stated that he had consulted nearly all the leading surgeons and dermatologists of this country without obtaining a diagnosis, or any encouragement in operative interference.

I found upon examination that the scrotum was thickened and about six times its usual size, as was also the prepuce, the latter not having been retracted for years.

Papillomatous growths, varying in size from the head of a pin to a large pear, studded the surface of both the penis and scrotum. There were also many small angioma.

This thickened papillomatous and angiomatous condition existed on the skin of the right leg from the apex of Scarpa's triangle to the toes, gradually becoming more extensive as the foot was approached. The greatest trouble, however, was between the upper third of the leg and the ankle.

Upon removing the bandage, which had been used constantly for years, and which was necessarily made tight, the entire leg would immediately begin to swell, and continue to do so until it would become twice its normal size, having a tense glistening appearance, accompanied by considerable pain and discomfort.

If the cuticle was abraded, lymph would flow continuously until from 5 to 30 ozs. would have escaped. This was also the case if a papillomatous growth was broken, or the skin punctured with a needle. This exudation was very annoying, as it would occur on the slightest provocation and could not be controlled, ceasing only of its own accord. The lymph was the color and consistency of thin cream, slightly tinged here and there with blood. It was bitter, and crystallized on evaporation.

When 18 months of age an abscess formed in the right groin, which was freely incised by the attending physician. From this dated the trouble in the leg, scrotum and penis.

The patient would have three or four severe chills during each year, followed by a temperature ranging from 103° to 104.5°. Delirium would accompany the chill and fever for from twenty-four to forty-eight hours.

It was found upon close inspection that the leg was larger and more uncomfortable just preceding one of these attacks. The quantity of urine voided during the time would be less for the first twenty-four hours, but would then flow in abundance. The appetite was poor, the skin clammy and of a light copper hue, the eyes glassy, and his mind dull and inactive; bowels constipated, with great tenderness in and about the right iliac fossa. There were also extensively enlarged glands in this region.

Under the circumstances, I advised complete circumcision and scrototomy at the same time, explaining how it might be possible to have a great loss of lymph from the severed integument. However, consent was given to remove the prepuce. If this did not cause trouble, he would allow me to amputate the scrotum later on.

Circumcision.—Within a few days he presented himself for operation, which was made painless with cocaine. An incision was made upon the dorsum, after which the lateral incisions were made, thus baring the gland entirely. There was no blood or flow of lymph whatever to complicate matters, and the patient made a rapid recovery, being on his feet constantly after the first three days. Numerous small papillomata were found distributed over the surface of the gland, many of which were of a pearly white, while others were reddened, giving the appearance of angiomæ.

His anxiety was now relieved and the irritable condition of the gland and prepuce at an end, all of which gave him courage to undergo the more severe operation. He gained five or six pounds during the following two months, at the end of which he decided to have the scrotum amputated. This was done in November, 1890, in my private hospital, in the following manner:

After applying a King clamp, one-third of the scrotum was removed and the edges brought together in the usual way. It was found that the vascular supply was much greater than in a normal scrotum; some of the vessels being twice, while others were three times their natural size. In consequence thereof considerable hæmorrhage ensued.

It was found, however, that the exudation of serum was slight and of but little importance, while the principal bleeding point was obstinate.

The patient rallied nicely from the anæsthetic, chloroform, and complained but little until about 11 P.M., when he suffered considerable pain. There was constant oozing from the wound, with extensive swelling of the entire scrotum. This led me to suspect concealed hæmorrhage about 3 A.M., when I cut the stitches to find the scrotum distended with blood clots. There was also arterial hæmorrhage, evidently from the same point as at the time of the operation, at 10 o'clock of the preceding A.M.

The cavity was evacuated and exposed to the air, when the hæmorrhage ceased. The stitches were again adjusted and the wound dressed with dry boracic acid. He remained in the house for one week, at the end of which time he left for his home. Part of the wound healed by granulation.

During the following year he had but two or three chills followed by fever. He gained flesh, felt more comfortable, appetite better, slept better and felt entirely satisfied with the result.

The operations were not with the view of curing the patient—merely to relieve. I feel assured that the end justified the means.

I believe I was wholly responsible for this accident, in that had I been more careful in torsioning this artery, the unpleasant hæmorrhage would not have occurred.

NEURECTOMY OF THE POPLITEAL SCIATIC NERVE FOR PAINFUL NEUROMA AS THE RESULT OF GUNSHOT INJURY.

M., æt. 27 years, a tinner by occupation, consulted me on August 14, 1891, stating that he had been shot two years previously through the leg, and that he had suffered excruciatingly ever since. He also stated that by the advice of the attending physician he had become addicted to the habit of taking morphine hypodermically until he had reached the daily maximum quantity of fifteen grains. This statement was easily verified by the innumerable pigmented points upon the legs where the hypodermic had been inserted.

Upon examination I found that the ball (38 calibre) had passed obliquely through the left leg, entering on the inner side three or four inches above the condyle, anterior to the ham string of the biceps, passing upwards at an angle of 45°, making its exit externally about the middle of the thigh.

At the time the revolver fell from the counter and exploded (for this was the way the accident occurred) he was standing erect. Immediately upon hearing the report he felt a severe pain in the toes of the injured leg. Thinking that he was shot in the foot, he had his shoe removed, but could not find anything to indicate such a state of affairs. He did, however, find a stream of blood flowing down the leg, indicating that the injury was higher up the member, and which led him to the exact point of entrance of the ball. The pain within an hour or so became equally distributed over the foot and that portion of the leg below the injury.

As pain is the thing for which the physician is most consulted, he went from one to another, trying every remedy that might be suggested, without relief; hence, the advice given by the physician in a fit of desperation, to relieve himself of the responsibility of caring for such a patient. He would take an injection wherever he might be, when the pain came on; whether it was on the house-top or in the shop. I saw two of these doses taken, satisfying me that each contained five grains.

Operation.—Aug. 20, 1892. Leg shaved and cleaned as well as possible, chloroform administered and rubber bandage applied from toes upward. An incision four inches in length was made in the median line posteriorally, encroaching upon the popliteal space. The skin being divided, I tore my way through the tissue at once, exposing the nerve, which was three times its natural size, for a distance of one and one-half inches. Upon examination I found that the nerve divided much higher up in this case than any I had ever seen, fortunately for if it had not been both branches would have been divided. I found that the external branch was the uninjured one, and that it was adherent to the internal one for a distance of three inches. A section one and three-fourths inches long was excised, which included the entire enlargement. Before dividing the nerve, a silk thread was passed through it, on either side of the enlargement, so that the ends could be brought together by flexing the leg at right angle. The leg once flexed, the ends were coapted and a silk suture applied on each side of the central artery, that it might not be injured. I then passed another silk suture through each stump, one inch from their ends and tied them, so that too much tension would not be brought on the two smaller ones—distributing the tension. The external branch being much slackened by the flexion was left to care for itself. A drainage tube was placed in the wound and silk suture used to close it.

The leg was kept flexed by a strap about the ankle, attached to a band about the body. Upon rallying from the operation the patient complained of pain, the character of which was similar to that before the operation, so that it was necessary to give one-half grain of codeia at 7 P.M and 9 P.M. following the operation. The use of morphine was forbidden and the use of bromide and chloral resorted to.

The temperature reached one hundred on two different occasions and remained about ninety-nine during the course of recovery. The Faradic current was used with great benefit at various intervals. The drainage tube was removed on the third day and the cutaneous stitches on the fifth day, at which time there was a slight discharge which continued for about fifteen days.

On the twelfth day the leg was let out five or six inches and the patient allowed to sit up. The pain was more severe while the patient was lying upon his back than while sitting up or around on crutches.

He was allowed to be up and about on his crutches every day after the twelfth day. The pain gradually disappeared, and he was allowed to leave "The Trinidad" on Sept. 10, 1892, having been in the hospital twenty-two days.

I heard from him recently, and find that he is free from pain and the morphine habit.

Dr. Ridlon of Chicago, believed that there are certain cases of congenital club-foot that cannot be cured without excision of the astragalus, though some claim that all cases can be cured by stretching and dressing, and others that all can be cured by tenotomy. He had a case in which different dressings were carefully applied with an unsatisfactory result; then tenotomy was done and the foot dressed with plaster of Paris and still the case relapsed, then the open operation *of* Philipps was done, and even then, after wearing carefully adapted apparatus, it relapsed. Finally the astragalus was removed and it was found to be wedge-shaped posteriorly, which accounted for the difficulty in keeping it in position. The result was perfectly satisfactory.

Dr. Sayre, of New York, said that he would not go so far as to say that all cases of club-foot could be cured without removal of the astragalus, but he had never seen one which required it. Even if we have this distorted condition of the astragalus we must remember that at first these bones are soft and malleable, and if the foot is put in correct position the bone will be moulded. He could conceive of cases, where there was absence of different parts of the foot, where removal of parts of bone might be necessary to correct deformity, but in congenital cases treated from the outset, he was of the opinion that no bone operation was required. He had not yet met with an advanced case that required bone cutting operations, and he had seen cases in persons from 26 to 46 years of age, which had been without treatment since childhood. Complete section of the ligaments and all holding soft tissues was sufficient if combined with great force in putting the foot into normal position. The reason why so many cases relapse is because they have never been cured. No case should be considered cured until it can be retained in position without apparatus. Something may be said for operation if the patient cannot afford the time for the slower treatment.

WHAT IS THE RELATIVE INTERDEPENDENCE OF ORGANS OF THE BODY IN HEALTH AND DISEASE?

Read by title in the Section of Practice of Medicine at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY J. B. HERRICK, M.D.,
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In presenting my thoughts on this subject I am moved with a desire to express to you those things which we have all seen in our professional experience. From those observations we may piece out our conclusions—examine them, and approve or decline their acceptance. By such processes do our minds make progress along the way of truth. The conclusions in the complex problems of medicine are oftener determined by the point from which we start. In giving my thoughts on this subject I may say further that I have no expectation of presenting any new principles but old established ones in a relation from which we may hope to draw profitable conclusions.

The problems regarding disease are so obscure and involve so many and such varying factors that their solution has baffled the skill of wise men of all ages —and as yet, though we have to deal with natural phenomena which present uniformity, except in varying conditions, we have not rested our inquiries upon any absolute principles, from which we can reason with unanimity in the interpretation of facts. Medicine is called an uncertain science, and we confess with some show of truth which result often in most unsatisfactory empyricism in the art. In this we find the varied and conflicting theories of pathology, and also conflicting methods in the art, so that the problem before us is to establish some principles on which we can rest, and art that shall be established so as to require the one practicing it to consider the differences in each case, and apply such remedial means as shall appear reasonable because referable to some accepted principle. It is some such reflections as these that the question of the relative interdependence of organs in health and disease, presents itself for solution. To this inquiry I respectfully solicit mutual attention. We recognize the mechanism of the body as complex; with each part dependent upon another, so that the whole can attain its typical structure and function, only when the several parts each attain their special end. While this is true, it is also obvious that there are degrees of dependence and interdependence among the different parts, which it is always essential to recognize in a pathological and therapeutical point of view.

That the different vital organs are not equally responsible for diseased conditions we readily admit. As all forms of disease must be looked upon as only a disturbed normal process in some organ, or group of organs, an inquiry as to the interdependence of the different parts may be regarded as an essential step in the solution of the problem of diseases. The body is so complex an organism that we are prone to overlook the fact that it is made up of different groups of organs having certain related functions, all of which constitute the phenomena of life. It is a mechanism, and each of its different parts have certain essential functions while others are more or less passive. It is to call attention to this relationship among the different organs, and in doing so to enquire as to the beginning of disease that I present this subject. Recently I was called to attend an elderly gentleman, a watch maker and repairer, who was a shrewd yankee and withal very skeptical as to the skill of physicians to diagnose disease and any scientific guidance as to remedies for their cure. After some general conversation, I asked him if in his experience in repairing watches he had not found [illegible] certain parts of the watch were prone from cer[illegible] peculiarities of contruction or activity of func[illegible]n to get out of order, more easily than others. Were not the diseases and defects of the watch generally found in certain parts? To which he promptly replied, "yes." What are those parts? I asked, "The escapement and mainspring," he said. I took occasion to show him that his body was as distinctly a mechanism as the watch, and that the conditions of health were as strictly dependent upon the organs of the body as the watch for keeping time upon its intricate parts. I also assured him that there were certain parts of the body's mechanism that were prone to disturbance in consequence of which the whole phenomenon of health was liable to be impaired. For the purpose of showing this relationship I have arranged a grouping of the tissues and organs of the body with reference to their mutual dependence. I am aware that this grouping is somewhat arbitrary, and is given only to assist in answering the question before us, and making my thoughts clear. In this arrangement I have made three groups. Under the first group I have placed those parts that are entirely passive and wholly dependent upon other parts for their support. In the first group we have

1. Osseous tissue.
2. Connective tissue.
3. Cellular tissue.

In the second group I have arranged those organs whose functions are active in securing the ultimate end of life,and which contribute to the support of all the others and yet are themselves dependent. In this group we have arranged

1. The circulatory system.
2. The muscular system.
3. The nervous system.
4. The reproductive system.

This group includes those organs that perform the active and responsible functions of life. In the third group I have arranged those organs whose functions are elementary and entirely accessory to the second group. The functions performed by this group are essential for those of the second. If they are in any degree suspended or defective their influence is felt in the functions and they of all others are prone from natural causes to disturbance of the more active organs of the second. The group includes:

1. Organs of Secretion.
2. Organs of Digestions.
3. Organs of Absorption.
4. Organs of Assimilation.
5. Organs of Excretion.

This third group, it is to be observed, includes all the organs which contribute to the marvelous process of transforming the varied alimentary substances included in foods, into blood, which is the first essential material for the nutrition of every part. It is obvious with some such grouping of the organs and tissues for the object intended we are able to appreciate the function of each group and consider the relative dependence of each. For example, it is evident that for normal nutrition and structure the osseous tissue and its group are entirely dependent upon other and accessory parts and processes. All diseases of bone, connective or areolar tissue are always due to certain abnormal condition of nutrition, as blood, blood supply, or nerve influence. Each of the tissues in this first group have passive functions. If other functions on which they depend are normal these will always be normal. If we carry the same inquiry to the second group of organs that have more active functions we find among them certain absolute and uniform conditions necessary for nutrition and normal functions. It may, I think, confidently be asserted without question that if there is a right state and supply of blood and normal nerve force the function of each will be normal; nutrition will be normal, health will prevail in each of the organs of this group. Whichever of the various views of pathology is accepted we should follow along the line of physiology to detect the pathologicial, the normal to detect the abnormal. It is obvious that whatever of morbid material exists and whatever its form, either germ life, necrotic-material or mineral poison, for working its morbid effect, it must be carried to the tissues through the agency of the blood vessels or lymphatics. Accepting this statement, it would seem to follow that the function of the second group of organs will be normal if the functions of the third are performed.

The second group includes organs which are concerned in all of the active operations of life—their action may be regarded as ultimate or for the chief ends of life, and this action always depending upon the coördinate nutrition of all parts, and also those for the completion of these functions themselves.

If my statements are correct, and conclusions accepted, it is obvious that the five processes included in the third group of organs, as I have arranged them, are the first essential processes for the completion of all others. If secretion is defective, digestion is abnormal; if digestion is abnormal, absorption is defective or material defective for assimilation is absorbed; if absorption is abnormal assimilation is defective. Assimilation being defective, or imperfectly assimilated material passing into the circulation, the organs of excretion are the first to suffer, their function being to eliminate effete or morbid material; but unassimilable material cannot be eliminated by these means without working injury to the organs of excretion. For example, if an excess of amyloid food is taken more than can be transformed by the assimilative process of the liver it passes into the circulation of the blood and finds its way out through the kidneys, as the organs of elimination, and being a crude, unassimilable material it acts as an irritant to kidneys as in diabetes. The disease of the kidneys is secondary. Again the blood making process being defective the blood is ill adapted for its function as the chief element of nutrition. With such a condition nutrition is impaired in the passive tissues of the first group, also the nutrition and function in the active organs of the second, also the organs of excretion of the third group. May not many of the diseasss of the lungs find an explanation by this reasoning? Under such conditions there is in each group obviously a merging of physiological processes into pathological. It is hardly necessary to observe that the pathological changes are always slow; that no disease occurs suddenly, but there has been a gradual lapse of the normal into the abnormal. From this it is appreciable also that disturbances in the first and second groups cannot be corrected except as we look back to the third group and there seek to correct the beginnings of disturbances? Is not every experienced physician conscious that we are unable by known remedies to change directly or continuously heart action, muscular power or nerve force or any of the functions of the second group of organs, much less the tissues of the first group? The third group of organs we have special power to control, assist or modify. Secretion is a function which may be markedly changed by remedies. The whole complex process of digestion depends upon ferments secured by secretion. Disturbed secretion is followed by disturbed digestion which is the first essential condition of health. The glandular organs of this group are of all others prone to disturbances and the most great and serious of all diseases are attributable to defects in the organs of this class.

When we consider the complexity of the process and the variety of food taken under the enticement of appetite, is it strange that most diseases are to be referred back to the digestive group for the origin of disease? Besides it is our province to guide the selection of appropriate food, both for digestion and for the wants of the organism in its varying conditions of exercise. Food may become wholesome for the wants of the system or from some defect in quality for digestion, or excessive in quantity become the rankest poison. I am impressed with the idea that if I could adjust the food to the wants of all, and appropriately guide their exercise, I could by such means remove a large portion of the sickness of the world. Other organs that are notably under the care of the physician are the organs of excretion, also arranged in our third group. The elimination of effete or morbid material we are in a very marked degree able to influence and control. Indeed, every physician finds his largest duty to consist in supplying pure air for the eliminating process of respiration, correctives for the disturbed secretion, and excretion cathartics for clearing the digestive canal, diuretics for the eliminative functions of the kidneys, diaphoretics for the respiratory function of the skin.

It is observed that in all those therapeutic matters we are dealing with the third group of organs in our schedule, and in all these means our skill consists largely in appropriately controlling those functions which are essential for the right state of blood. Those who have had experience in the practice of medicine are conscious that they are unable in a single case to select a remedy which has specific virtues for the cure of any normal disease. They know that all means must be directed to the blood-making and blood-purifying processes, and through the blood to nerve and function of the part affected. They further learn the futility of local agencies to cure idiopathic diseases, as linaments for rheumatism, local applications for diphtheria, erysipelas, or any of the diseases of internal organs. Local means have their place as efficient agents, but the treatment must look back to the conditions that control nutrition. Who can reasonably expect to cure tubercle of the lung or any part by local applications, cancer by excision alone, a specific ulcer by local applications? Are we not able at this stage of our knowledge of physiology to detect the cause of disease as always due to some disturbing agent of nutrition which has definite conditions? With such a view of the art of medicine we may see how contemptible any restricted pathy is which proposes to guide to the cure of disease except as it looks to the correction of physiological disturbances. I am aware that the standing problem to-day for the physician as it has been in all ages is the cause of disease. In answering this question external and internal agencies have been named and their influence vaguely defined. Is it not appreciable that most causes of disease must act to disturb the functions of one or more of the organs of the third group except, perhaps in a few instances where poisons and parasites are distinctly traced? In this line of inquiry if we are met by those who accept the parasitic theory, which is that diseases are the result of microörganisms in the form of bacteria I reply that as yet we have been unable, except in a very limited way, to establish causation from germs or to find any specific agent as an antidote to any of the so-called specific diseases, and in my judgment we need not expect it. Further, I must call attention to the power of resistance in the body, against such infection. It has been fully shown that it is able to resist the infection from disease germs when it is in its normal standard of health.

Mitchenkoff has shown that by a process known as phagocytosis or cell devouring cell, the assimilating power in the blood is sufficient to cope with the lower form of cell life. Bouchard and others have observed the destruction of bacilli by the spleen and their elimination by the kidneys. Buchner and Lubarsch have shown the bactericidal power of blood serum. The liver is also shown to have a destructive power over each organism, and thus guard the system from these sources of disturbance.

If in full health, the antagonism between the normal tissues of the body and disease germs has been shown to be a rational means of defense, these agencies we should wisely guard, rather than that all of the attention should be given to exclude germs from the body. This line of reasoning regarding the antecedents of disease is the outcome of a desire to see adopted by the profession some universally accepted principles on which the practice of medicine may rest as a true art. If clear appreciable principles are established which none can gainsay we have the elements of a true science. The art must, as in all arts, rest upon the judgment of the one practicing it. When such reasoning prevails there can be no place for any of the conflicting theories; there can be no allopathic, homœopathic, hydropathic, uropathic, or any other of the various schisms in medicine. Our practice would then be spoken of and given the confidence due to a rational profession, because all the methods of treatment would be referable to the primary organic disturbance rather than to vague and ever varying symptoms. Inasmuch as we deal with natural phenomena which are always uniform, except in varying conditions we have the elements of as true a science as chemistry, astronomy or physics. The art, to be sure as all other arts, must rest upon the varied and conflicting judgment of those attempting to apply it. With the principles of a true science established, our profession will be glorified because it reaches out and grasps the forces of the Eternal, which tends in the constant changes to conserve human life for a higher end.

AMPUTATIONS IN THE LIGHT OF MECHANICAL SCIENCE.

Read in the Section of Surgery and Anatomy at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY STEWART LEROY McCURDY, M.D.,
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Dr. Oscar H. Allis, in his paper before the Pennsylvania State Medical Society, June 4, 1891, said: "Don't amputate through the joint; go above or below it." Such a statement by a surgeon of such thoughtfulness and eminence must necessarily carry with it a vast majority of men who amputate, but who allow other men to do their thinking. No one, of course, would for a moment suspect Dr. Allis of making such a statement unless he believed it, and such a conclusion could only be the result of a thorough investigation of the prothegenetic as well as of the mechanical phases of the question.

After having made a study of the matter for the past number of years, I am compelled to make the statement that joint amputations afford the best stumps, and no surgeon is justified in going three inches above the ankle and knee, as the limb maker, Truax, suggests when a disarticulation can be made. Why should three inches of a human extremity be sacrificed because of lack of ingenuity on the part of the mechanic? No; but rather compel the mechanic to fit the stumps you send to him.

There are many reasons why the natural articular surface of a bone covered with abundant soft tissue makes a more durable stump than one formed by a cut through the shaft of a bone. Nothing is more natural than that dealers should, and do, advertise the goods they have for sale, and if he can make a leg that will fit a joint amputation, he will so advertise and recommend the surgeon to disarticulate; but if he cannot successfully do this, he is sure to advise the surgeon to go far enough above the joint to make room for the machinery of his limb. Is this merciful or right in any sense? Yes, it is right unless it is possible to adjust an artificial limb to joint amputation, but it is radically wrong if such limbs can be made and proven more durable and comfortable to the wearer. Dr. Mordecai Price, of Philadelphia, said: "If he had to have an *amputation* below the knee, he would prosecute a man that would give him a stump of more than four or five inches." While it is undoubtedly unwise to go nearer than three inches, and better six inches above the ankle, when the articulation has to be sacrificed. I am firmly convinced that a Syme's amputation makes the best stump possible, and I may say the most comfortable of all stumps. I am also convinced that a disarticulation at the knee joint furnishes a most admirable stump for the adjustment of an artificial limb, and is much more serviceable than at any point above the joint.

Why then should amputations be made through the joint in preference to points above. 1. The broad articular ends of bones make better stumps than cuts through the shaft.

2. The knob (I may be allowed to call it) formed by the condyles at the knee, and maleoli at the ankle, furnishes points about and above which the socket can be adjusted which prevents the pumping motion so common and so very objectionable when a cone stump is to be fitted.

3. Artificial limb makers can and do make limbs for disarticulations.

As to the first proposition. No one will doubt the advisability of making disarticulations, nor will they recommend the sacrifice of one inch more of human tissue than is absolutely necessary, provided stumps at the joints can be satisfactorily fitted. One maker says: "Amputations at the knee are very favorable and are preferable to any point above." Again, the same maker says in speaking of Syme's amputation: "This amputation leaves a stump that combines the greater number of favorable conditions * * * is better than above or below * * * the end of the stump bears the weight, and the patient can be supplied with a leg that fills the highest possible conditions and at the least cost."

Other quotations might be made, but suffice it to prove that limbs *are* made for disarticulations and are better than above the joints.

In Syme's amputation, I have a patient wearing an adjustable lacing socket limb made by the Pittsburgh Artificial Limb Co., who is a freight conductor, and he can jump on and off trains going as fast as he ever could.

I have a number of letters from men with Syme's amputation wearing limbs, and in no case do I find anything but commendation for the satisfaction they get in wearing their substitute.

Puddlers, railroaders, clerks, and laborers of all description, who are compelled to stand or walk all day, have no complaints to make.

In a Syme's or knee operation, the bearing can be received and divided at the will of the patient between two different points. In case of the ankle by simply slacking the lacing of the socket, the bearing can be thrown on the end of the stump, and by tightening the lacing the weight can be received by the head of the tibia.

In knee amputations, so also can the bearing be shifted from the end of stump at the knee joint or upon the muscles of the thigh as may be the pleasure of the wearer. In either case, the patient learns to all the time divide the weight upon the two points and thus make just half the pressure that would be in a leg or thigh amputation.

Surgeons would hardly question the advisability of doing disarticulations provided they were sure they were giving their patients a stump that could be fitted by the mechanic. Again, who will question the advantage of the broad surface of the condyles covered with synovial membrane cartilage, and the structures nature intended to receive pressure, has over the end of a bone cut through the shaft.

The practice of sawing off the condyles and the maleoli is certainly a misguided step. These knob like ends made by the condyles and the maleoli are of wonderful advantage to the patient. When a conical stump is put into a corresponding socket, there is nothing to hold the leg in the socket but a strap worn over the shoulder· This is all right; but in disarticulations this is unnecessary. From the fact that the condyles and maleoli have a greater diameter than a few inches above these points, the limb maker is able to adjust these points and thus prevent the annoying pumping motion of the stump in the socket.

If the condyles or malleoli have to be removed, then there should be no question as to the advisability of making the cut far enough from the joint to allow room for the machinery of the limb maker. It is also argued that when one-half of a joint is removed a substitute cannot be made and retain the normal relationship of the joint. This is not the case, for I have here a limb that places the joint parallel with the lower end of the femur. These photos show a patient wearing one of these limbs, and as you see in the three positions, the act of a full step is shown, which is evidence that a joint can be substituted and the normal relationship of the joint retained.

I am firmly convinced that artificial limb makers should make their limbs so as to make the bearings upon but four points:

1. The ankle as in Syme's.
2. Below knee, or about the head of the tibia.
3. Knee.
4. Perineum.

By this I mean that a conical stump of soft tissue which draws the skin back over the end of the bone, cannot be as comfortable to the patient as a bearing upon the normal articular ends of the bones, or fixed bony prominences.

In all amputations above the knee, I am sure that the future limb will be made so as to receive the bearing on the *tuber ischii* by the use of the Thomas' ring.

Orthopædic surgeons have long since considered this the only bearing for splints that are to receive the weight of the body.

As to tarsal amputations, I believe the proper thing to do in such cases is to perform your Chopart, or a Hayes, tenotomize the tendo Achilles, and in some way induce anchylosis of the remaining tarsal and tibio-tarsal joints. This, you will say, will throw the patient upon the remaining end of the stump in the act of walking, and thus make a limp. I say no.

Please study the part taken by the ankle joint in making one step. As the foot is thrown forward, the ankle joint is extended, and when the leg is perpendicular the joint is at a right angle to the axis of the leg. As the body is thrown forward, the joint does not go into flexion as might be supposed, but instead the foot retains almost the same relationship to the leg as it did when the body was vertical to it. If this be true, then the act of flexion of the foot is not essential to graceful walking. If you notice, as you throw the body forward, there is a graceful rise of the heel from the surface, and the body's weight is received by the ball of the toe.

In other words, the ankle-joint of an artificial limb plays a very minor part in the act of walking. Dr. Cathcart, of Edinburgh, Scotland, has made a thorough study of this subject, and to his papers I most respectfully refer you.

Truax, in his article upon amputations, says: "See that the end of the bone is well rounded or smoothed at its outer border." This reminds me of the boy in my practice who wanted a brass knob put on the end of the bone in his leg after amputation. Nothing is more absurd, and would tend more to encourage necrosis of the end of the bone.

Surgeons should not only know what limb makers cannot do, but they should also know what they can do; and it is their duty to study the prothetical side of the question as well as the surgical.

The writer would do well to cut into a stump of a dead man and see that nature does the rounding up of the end of the bone, and if the surgeon would dare to assist her, his meddlesomeness would be criminal.

The photos 1, 2 and 3 represent a disarticulation at the knee joint, with the knee in the positions necessary in the act of walking. Cuts 4, 5 and 6 represent a Syme's amputation. The patient is a railroad freight conductor, who runs over trains, and jumps on and off trains at ten miles per hour. This man says the point of bearing is just where he wants it —either on the end of the stump or around the head of the tibia. Cut 1 represents an artificial limb for a Syme's amputation, and cut 2 represents one for a knee joint amputation.

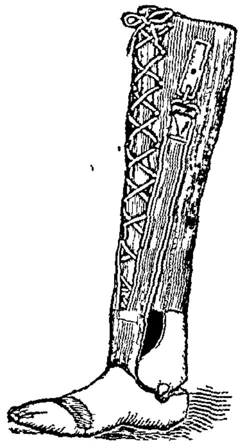

Fig. 1.

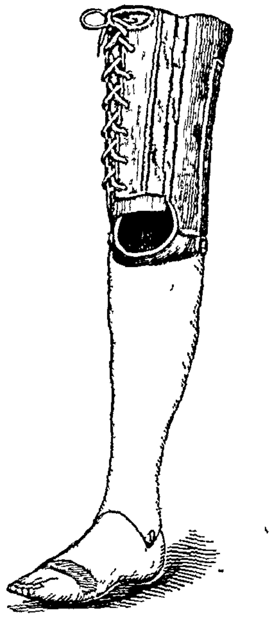

Fig. 2

Dr. Adams inquired as to the use of an artificial foot after Pirogoff's operation.

Dr. McCurdy replied that this operation should not be made at any time, but a good foot can be made for this operation.

Dr. King, of Missouri, disagreed with almost every point made in the paper, basing his objections on considerable experience in railroad surgery. He said that the best artificial limbs were the hollowed out willow limbs, and he considered the cone-shaped stump to be the best. The patient is not expected to walk on the end of the stump. He made it a rule wherever he could to go above the joint.

Dr. Craig, of Pennsylvania, said that he had made a special study of the surgery of the lower extremity, and he agreed with Dr. King. The effect of saving the joint after the ball of the foot is removed is to make the man a permanent cripple. The amputation two inches above the ankle joint gives you no more control than a few inches below the knee, but it exposes a large portion of the limb to friction, and makes a tender limb from the effects of the wrappings round the lower extremity. He believed that every foot to be removed near the ankle joint will be better removed halfway between the ankle and knee.

FORCED RESPIRATION (FELL METHOD), PER FACE MASK AND TRACHEOTOMY IN DIPHTHERIA. REPORT OF CASE.

Read before the Section of Surgery and Anatomy, at the Forty third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY GEORGE E. FELL, M.D., F.R.M.S.,
OF BUFFALO, N. Y.

The following case is presented with the belief that it has some features of novelty of an interesting character and

1. To illustrate how forced respiration may be of great value in surgical operations associated with conditions of asphyxia.
2. To illustrate its value per face mask and also tracheotomy in cases of membraneous diphtheria and croup.
3. To demonstrate the value of peroxide of hydrogen in asphyxia produced by membraneous exudates in the trachea and bronchi of the lungs.

The history of the case may also prove a valuable lesson to parents with children suffering from throat trouble, and who hesitate to call a physician in time.

A resident of Buffalo, whose family consisted of wife and four children, the eldest a daughter 9 years of age; a son 7 years and 3 months; a daughter 4 years, and an infant son, 2 years of age. The eldest daughter was taken ill with throat troubles and general disturbance of the system. She was quite sick and was taken from school. On the 29th of March, 1892, the eldest son was taken sick, and he like the sister, was treated with home remedies until about 5 A.M., on the Sunday following, June 4, when the father discovered him in a cyanotic condition, breathing with great difficulty, and evidently in great danger. I was called about 8 o'clock in the morning, and arrived at the residence an hour later. On examination I found the four children ill with diphtheria, the exudates being quite clearly marked in the eldest daughter and the son. The son was respiring with great difficulty, and his life was in immediate danger. I informed the father there was only one thing that could be done at that time, and recommended tracheotomy as a means of holding the case, but held out no hope of ultimate recovery of the child. The younger children were also ill, the exudation, however, not so extensive, as the disease had affected them later than the first two. The mother desired the operation to be made. I sent for Dr. Colton, near by, to assist me, but before we were ready to make the operation the lad became unconscious from the cyanosis, and necessarily in a very desperate condition. He was placed upon a table, the initial incision made for the operation of tracheotomy. The blood was purple. No anæsthetic was used, as it was not necessary. A few moments after the first incision was made Dr. Colton called my attention to the fact that the pupils of the eyes were rapidly dilating. I had fortunately prepared my forced respiration apparatus so as to have it ready for immediate use should occasion warrant, and had it not been ready I undoubtedly would have had the experience which frequently comes to some surgeons, of death occurring during the operation. I immediately placed the forced respiration cup upon the face and respired for the little fellow, resulting in changing the blood to a bright scarlet in the wound in the neck and causing the return of auto-respiration. I proceeded with the operation, and found it necessary before I completed it to repeat the respiratory work with the forced respiration apparatus some six or seven times, in some instances having to respire quite a little time before auto-respiration was re-established. This is an unusual and peculiarly interesting fact, associated with the question of interference with respiration through exudates in the respiratory tract, that it is possible, (it may be for a short time only,) to breathe, retain the life of a patient, overcome the influence of the exudate and tone up the system so as to enable auto-respiration to be carried on. I completed the operation and placed the tracheotomy tube in the trachea, and even then found it necessary before consciousness returned to respire some time for the lad. After becoming conscious he breathed with very little trouble for quite a period of time. The general treatment directed was a spray application to the throat and nasal passages of the peroxide of hydrogen, about 30 per cent. aqueous solution. The father was directed to use this occasionally in the wound in the neck if he found it necessary. The afternoon of the day of operation revealed a condition similar to that which existed after the operation in the morning. The boy was moving around the house, although the respirations were at all times more or less labored. At intervals the inner tube of the tracheotomy tube would close up with the exudate and require frequent cleansing. The father stated on my second call that if he had followed my directions to merely spray lightly the wound in the neck, his boy would have died before my return. He found it necessary to place the tube of the spraying apparatus in the opening in the neck, or in the tracheotomy tube, frequently to prevent the cyanotic condition from ensuing, that "the spray appeared to liquify the membrane, or the mattery substance, and cause it to come away in a foamy, frothy state." During the afternoon the condition of patient became worse, the membranes filling up the trachea apparently, so that Dr. Colton, who was present, applied the forced respiration through the tracheotomy tube, again relieving the little patient from the severe dyspnœa which prevailed at the time. Sunday night the case progressed about the same, frequent resort having to be made to the peroxide of hydrogen to enable the little fellow to get along at all. On Monday and Tuesday extensive membraneous casts of the tubes and trachea were coughed up and passed out of the tracheal opening. The boy retained his vigor under the adverse conditions existing until Tuesday afternoon, when the exudate seemed to be increasing and interfered with the respiratory efforts, which condition could not be overcome, even by the forced respiration apparatus, and about eleven o'clock Tuesday evening the patient died from exhaustion and heart failure.

The other patients in the house had upon my arrival been placed upon the common method of treatment which I used in these cases, tincture of chloride of iron, chlorate of potash, bichloride solution and so on internally, with the peroxide of hydrogen spray used every 10 to 15 minutes. While the exudates in their cases were very extensive, there appeared to be no serious invasion of the lung tissue, and they both made a nice recovery without any serious complications.

It was very clearly evidenced in the case of the boy that he would have died before I could possibly have performed the operation of tracheotomy had it not been for the forced respiration apparatus. How many cases of a serious character might be benefited, or have life retained by such work, and tided over the most serious results, cannot be foretold. It is unreasonable to assert that some patients may not recover who are as seriously sick as was this young boy.

Regarding the peroxide of hydrogen, its value was unquestioned. It produced liquefaction of the membranes in the throat; but whether a weaker solution would have proved more satisfactory or not, I am not prepared to state. As mentioned, the solution was about 33 per cent., and this apparently produced no uncomfortable effect when sprayed directly into the tracheal wound. This treatment appeared grateful to the patient in his distress, as also did the forced respiration application when it was made. In fact he eagerly requested that it be utilized later in the case, as it had relieved him once or twice. But, of course, the difficulty was in the prevention of formation of the exudates, which ultimately prevented the respiratory process from being carried on, weakening the patient so that the heart succumbed to the strain put upon it. I think there is no question from the result of the other cases that had this boy been placed in time upon the treatment to which the other children were subjected he might have recovered.

This paper is presented to this Section on account of its bearing upon an operation the surgeon must frequently perform, and if through means of this character the surgeon may be prevented from experiencing that most unenviable notoriety of losing a case during an operation it will be worth the time expended.

ADVANCES IN ASEPTIC SURGERY.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY FRANK J. THORNBURY, M.D.,

LATE SENIOR RESIDENT PHYSICIAN, CINCINNATI HOSPITAL, CINCINNATI, O.; DEMONSTRATOR OF BACTERIOLOGY, MEDICAL DEPARTMENT UNIVERSITY OF BUFFALO.

I desire to precede the reading of this paper by the statement that much of what I have to say is the product of work recently done in the von Bergmann Clinic, at Berlin.

Many of the ideas and facts are comprised in Schimmelbusche's "Aseptische Wound Behandlung," recently published to formulate in no limited amount of original work, done by von Bergmann's corps and other German investigators.

Having been assigned the English translation of this book, I take the privilege of utilizing some of its contents in this paper, which may serve in a measure as an introduction to the translated volume, which I hope in a short time to have completed.

In considering the subject of the advances in this department of our science, it seems very appropriate to review for a moment the past state of events, that we may be better able to draw the necessary deductions and convince ourselves of the extent of the progress.

We will not go back to the time in which deficiency of anatomical and physiological learning, as well as incompetency in technique, impeded the progress of surgery—but rather refer to a later era of uncertainty in the results seemingly dependent upon some grave mysterious influence which pervaded the field of surgery, and baffled the operator's most earnest efforts.

I refer to the time when the subject of wounds and fever were inseparable; the time when healing without inflammation was unknown, and wound suppuration appeared as the *natural* reaction of the injured organism.

This was the time when Pirogoff wrote that "all efforts of the physician and surrounding circumstance were of no avail, and that the results of an operation are dependent entirely upon fate."

Suppuration, purulent œdema, tetanus, gangrene and erysipelas were called the "scourges of surgery." They followed the operator step and pace, defeating all his efforts.

"Eighty per cent. of all wounds are complicated by gangrene," wrote Lindpaintner from Nussbaum's clinic, in Munich. Erysipelas was of such common occurrence in association with wounds, that men came to regard it as almost a natural complication.

It was made an established rule never to suture scalp wounds, on account of fear that pus would accumulate.

Healing by primary union was almost unknown, and suturing had at most the result of causing retention and accumulation of the secretions and favoring the development of erysipelas. In one report of seventeen amputations, eleven died of pyæmia alone.

A compound fracture seldom occurred which was not either at once amputated, or else the patient died soon as the result of intercurrent gangrene, purulent infection or septicæmia.

The mortality of compound fractures in Volkmann's clinic at Halle for a number of years was 40 per cent., and during 1871 and 1872 pyæmia and erysipelas became so frequent as to necessitate the clinic being closed.

How different it is to-day. The hospitals which twenty years ago numbered gangrene among their most frequent and disastrous complications of wounds, now never present a case for the observation of the student, and the majority of the younger surgeons scarcely know this disease.

The gravest operations now run a favorable course. "Fate" and "mishap" are terms no longer permissible. For the occurrence of suppuration the operator is directly accountable. The future of the patient rests in *his* hands.

We operate in youth and in the aged with the same assurance of a favorable result as that entertained in the robust adult of middle years. The abdomen and the cranium are opened without hesitation, and the visceral contents palpated or incised. We no longer believe that in a carcinomatous or tubercular patient a fresh wound is going to heal other than it would in a healthy individual. The theory of a *diathesis* predisposing to wound inflammation is a thing of the past.

For this enormous transition in surgical science, we are indebted to the illumination of the dark cloud suspended for so long a time over wound infection—to the revelation that in *living microörganisms* rests the danger. If the methods originally used were those now employed in combating the mighty enemy, then there would shine in more *brilliant light* the name of him who first showed us the way to progress—that of Sir John Lister.

But to Hunter belongs the original observation that subcutaneous wounds and simple fractures are unattended by suppuration; Lister comes *later* with the announcement that germs are the cause of infection, but claims that the infection takes place through the atmosphere. Elaborate "antiseptic" spray arrangements were accordingly for a time in vogue. Later investigations, however, proved that *the air* is rarely the medium of infection, that the natural *habitat* of organisms is *organic material* on the earth and elsewhere. Only as *dry dust* do germs get into the atmosphere. From moist surfaces they cannot arise.

The principal circumstances under which bacteria sidered the cone-shaped stump to be the best. The patient is not expected to walk on the end of the stump. He made it a rule wherever he could to go above the joint.

Dr. Craig, of Pennsylvania, said that he had made a special study of the surgery of the lower extremity, and he agreed with Dr. King. The effect of saving the joint after the ball of the foot is removed is to make the man a permanent cripple. The amputation two inches above the ankle joint gives you no more control than a few inches below the knee, but it exposes a large portion of the limb to friction, and makes a tender limb from the effects of the wrappings round the lower extremity. He believed that every foot to be removed near the ankle joint will be better removed halfway between the ankle and knee.

FORCED RESPIRATION (FELL METHOD), PER FACE MASK AND TRACHEOTOMY IN DIPHTHERIA. REPORT OF CASE.

Read before the Section of Surgery and Anatomy, at the Forty third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY GEORGE E. FELL, M.D., F.R.M.S.,
OF BUFFALO, N. Y.

The following case is presented with the belief that it has some features of novelty of an interesting character and

1. To illustrate how forced respiration may be of great value in surgical operations associated with conditions of asphyxia.
2. To illustrate its value per face mask and also tracheotomy in cases of membraneous diphtheria and croup.
3. To demonstrate the value of peroxide of hydrogen in asphyxia produced by membraneous exudates in the trachea and bronchi of the lungs.

The history of the case may also prove a valuable lesson to parents with children suffering from throat trouble, and who hesitate to call a physician in time.

A resident of Buffalo, whose family consisted of wife and four children, the eldest a daughter 9 years of age; a son 7 years and 3 months; a daughter 4 years, and an infant son, 2 years of age. The eldest daughter was taken ill with throat troubles and general disturbance of the system. She was quite sick and was taken from school. On the 29th of March, 1892, the eldest son was taken sick, and he like the sister, was treated with home remedies until about 5 A.M., on the Sunday following, June 4, when the father discovered him in a cyanotic condition, breathing with great difficulty, and evidently in great danger. I was called about 8 o'clock in the morning, and arrived at the residence an hour later. On examination I found the four children ill with diphtheria, the exudates being quite clearly marked in the eldest daughter and the son. The son was respiring with great difficulty, and his life was in immediate danger. I informed the father there was only one thing that could be done at that time, and recommended tracheotomy as a means of holding the case, but held out no hope of ultimate recovery of the child. The younger children were also ill, the exudation, however, not so extensive, as the disease had affected them later than the first two. The mother desired the operation to be made. I sent for Dr. Colton, near by, to assist me, but before we were ready to make the operation the lad became unconscious from the cyanosis, and necessarily in a very desperate condition. He was placed upon a table, the initial incision made for the operation of tracheotomy. The blood was purple. No anæsthetic was used, as it was not necessary. A few moments after the first incision was made Dr. Colton called my attention to the fact that the pupils of the eyes were rapidly dilating. I had fortunately prepared my forced respiration apparatus so as to have it ready for immediate use should occasion warrant, and had it not been ready I undoubtedly would have had the experience which frequently comes to some surgeons, of death occurring during the operation. I immediately placed the forced respiration cup upon the face and respired for the little fellow, resulting in changing the blood to a bright scarlet in the wound in the neck and causing the return of auto-respiration. I proceeded with the operation, and found it necessary before I completed it to repeat the respiratory work with the forced respiration apparatus some six or seven times, in some instances having to respire quite a little time before auto-respiration was re-established. This is an unusual and peculiarly interesting fact, associated with the question of interference with respiration through exudates in the respiratory tract, that it is possible, (it may be for a short time only,) to breathe, retain the life of a patient, overcome the influence of the exudate and tone up the system so as to enable auto-respiration to be carried on. I completed the operation and placed the tracheotomy tube in the trachea, and even then found it necessary before consciousness returned to respire some time for the lad. After becoming conscious he breathed with very little trouble for quite a period of time. The general treatment directed was a spray application to the throat and nasal passages of the peroxide of hydrogen, about 30 per cent. aqueous solution. The father was directed to use this occasionally in the wound in the neck if he found it necessary. The afternoon of the day of operation revealed a condition similar to that which existed after the operation in the morning. The boy was moving around the house, although the respirations were at all times more or less labored. At intervals the inner tube of the tracheotomy tube would close up with the exudate and require frequent cleansing. The father stated on my second call that if he had followed my directions to merely spray lightly the wound in the neck, his boy would have died before my return. He found it necessary to place the tube of the spraying apparatus in the opening in the neck, or in the tracheotomy tube, frequently to prevent the cyanotic condition from ensuing, that "the spray appeared to liquify the membrane, or the mattery substance, and cause it to come away in a foamy, frothy state." During the afternoon the condition of patient became worse, the membranes filling up the trachea apparently, so that Dr. Colton, who was present, applied the forced respiration through the tracheotomy tube, again relieving the little patient from the severe dyspnœa which prevailed at the time. Sunday night the case progressed about the same, frequent resort having to be made to the peroxide of hydrogen to enable the little fellow to get along at all. On Monday and Tuesday extensive membraneous casts of the tubes and trachea were coughed up and passed out of the tracheal opening. The boy retained his vigor under the adverse conditions existing until Tuesday afternoon, when the exudate seemed to be increasing and interfered with the respiratory efforts, which condition could not be overcome, even by the forced respiration apparatus, and about eleven o'clock Tuesday evening the patient died from exhaustion and heart failure.

The other patients in the house had upon my arrival been placed upon the common method of treatment which I used in these cases, tincture of chloride of iron, chlorate of potash, bichloride solution and so on internally, with the peroxide of hydrogen spray used every 10 to 15 minutes. While the exudates in their cases were very extensive, there appeared to be no serious invasion of the lung tissue, and they both made a nice recovery without any serious complications.

It was very clearly evidenced in the case of the boy that he would have died before I could possibly have performed the operation of tracheotomy had it not been for the forced respiration apparatus. How many cases of a serious character might be benefited, or have life retained by such work, and tided over the most serious results, cannot be foretold. It is unreasonable to assert that some patients may not recover who are as seriously sick as was this young boy.

Regarding the peroxide of hydrogen, its value was unquestioned. It produced liquefaction of the membranes in the throat; but whether a weaker solution would have proved more satisfactory or not, I am not prepared to state. As mentioned, the solution was about 33 per cent., and this apparently produced no uncomfortable effect when sprayed directly into the tracheal wound. This treatment appeared grateful to the patient in his distress, as also did the forced respiration application when it was made. In fact he eagerly requested that it be utilized later in the case, as it had relieved him once or twice. But, of course, the difficulty was in the prevention of formation of the exudates, which ultimately prevented the respiratory process from being carried on, weakening the patient so that the heart succumbed to the strain put upon it. I think there is no question from the result of the other cases that had this boy been placed in time upon the treatment to which the other children were subjected he might have recovered.

This paper is presented to this Section on account of its bearing upon an operation the surgeon must frequently perform, and if through means of this character the surgeon may be prevented from experiencing that most unenviable notoriety of losing a case during an operation it will be worth the time expended.

ADVANCES IN ASEPTIC SURGERY.

Read in the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY FRANK J. THORNBURY, M.D.,
LATE SENIOR RESIDENT PHYSICIAN, CINCINNATI HOSPITAL, CINCINNATI, O.; DEMONSTRATOR OF BACTERIOLOGY, MEDICAL DEPARTMENT UNIVERSITY OF BUFFALO.

I desire to precede the reading of this paper by the statement that much of what I have to say is the product of work recently done in the von Bergmann Clinic, at Berlin.

Many of the ideas and facts are comprised in Schimmelbusche's "Aseptische Wound Behandlung," recently published to formulate in no limited amount of original work, done by von Bergmann's corps and other German investigators.

Having been assigned the English translation of this book, I take the privilege of utilizing some of its contents in this paper, which may serve in a measure as an introduction to the translated volume, which I hope in a short time to have completed.

In considering the subject of the advances in this department of our science, it seems very appropriate to review for a moment the past state of events, that we may be better able to draw the necessary deductions and convince ourselves of the extent of the progress.

We will not go back to the time in which deficiency of anatomical and physiological learning, as well as incompetency, in technique, impeded the progress of surgery—but rather refer to a later era of uncertainty in the results seemingly dependent upon some grave mysterious influence which pervaded the field of surgery, and baffled the operator's most earnest efforts.

I refer to the time when the subject of wounds and fever were inseparable; the time when healing without inflammation was unknown, and wound suppuration appeared as the *natural* reaction of the injured organism.

This was the time when Pirogoff wrote that "all efforts of the physician and surrounding circumstance were *of no avail*, and that the results of an operation are dependent entirely upon fate."

Suppuration, purulent œdema, tetanus, gangrene and erysipelas were called the "scourges of surgery." They followed the operator step and pace, defeating all his efforts.

"Eighty per cent. of all wounds are complicated by gangrene," wrote Lindpaintner from Nussbaum's clinic, in Munich. Erysipelas was of such common occurrence in association with wounds, that men came to regard it as almost a natural complication.

It was made an established rule never to suture scalp wounds, on account of fear that pus would accumulate.

Healing by primary union was almost unknown, and suturing had at most the result of causing retention and accumulation of the secretions and favoring the development of erysipelas. In one report of seventeen amputations, eleven died of pyæmia alone.

A compound fracture seldom occurred which was not either at once amputated, or else the patient died soon as the result of intercurrent gangrene, purulent infection or septicæmia.

The mortality of compound fractures in Volkmann's clinic at Halle for a number of years was 40 per cent., and during 1871 and 1872 pyæmia and erysipelas became so frequent as to necessitate the clinic being closed.

How different it is to-day. The hospitals which twenty years ago numbered gangrene among their most frequent and disastrous complications of wounds, now never present a case for the observation of the student, and the majority of the younger surgeons scarcely know this disease.

The gravest operations now run a favorable course. "Fate" and "mishap" are terms no longer permissible. For the occurrence of suppuration the operator is directly accountable. The future of the patient rests in *his* hands.

We operate in youth and in the aged with the same assurance of a favorable result as that entertained in the robust adult of middle years. The abdomen and the cranium are opened without hesitation, and the visceral contents palpated or incised. We no longer believe that in a carcinomatous or tubercular patient a fresh wound is *going to heal other than it* would in a healthy individual. The theory of a *diathesis* predisposing to wound inflammation is a thing of the past.

For this enormous transition in surgical science, we are indebted to the illumination of the dark cloud suspended for so long a time over wound infection—to the revelation that in *living microörganisms* rests the danger. If the methods originally used were those now employed in combating the mighty enemy, then there would shine in more *brilliant light* the name of him who first showed us the way to progress—that of Sir John Lister.

But to Hunter belongs the original observation that subcutaneous wounds and simple fractures are unattended by suppuration; Lister comes *later* with the announcement that germs are the cause of infection, but claims that the infection takes place through the atmosphere. Elaborate "antiseptic" spray arrangements were accordingly for a time in vogue. Later investigations, however, proved that *the air* is rarely the medium of infection, that the natural *habitat* of organisms is *organic material* on the earth and elsewhere. Only as *dry dust* do germs get into the atmosphere. From moist surfaces they cannot arise.

The principal circumstances under which bacteria are found in the air are, first, in winds and other forms of violent agitation of the atmosphere; secondly, in rooms after sweeping, and in enclosed compartments with defective ventilation and bad hygenic surroundings; and finally, they are present in the air of densely populated cities.

Here we may find bacilli and micrococci, in numbers varying from a few to many thousands per cb. cm.: while in the free open air, principally moles and the spores are present in limited numbers.

In mid-ocean atmosphere there are no germs present. Of this fact I convinced myself in a recent transatlantic voyage.

While still in the Shelda River and English Channel, and again on nearing Sandy Hook and sailing into New York Bay, occasional isolated colonies developed on exposed agar plates. In mid-ocean, between 5 and 40 degrees W. longitude. no germs at all were present in the atmosphere. This was also true of the air blowing from the iceberged Newfoundland banks. In the staterooms and in the first and second cabins of the steamer, on the other hand, many bacteria were found on short exposures, especially in the halls after dining hours.

In the steerage, where there were 1,100 emigrants packed together in filth, many thousand bacilli and micrococci came to luxuriant development on agar plates and in the large gelatine tubes.

The colonies in 3 to 5 liter aspirations were numerable only by Esmarch's graduated scale. *Many of* the bacteria thus isolated presented virulent characteristics as regards growth and development. I have made some inoculation experiments, but as these are not yet completed, I cannot now make further definite report.

The reverse of dryness, diffused daylight and sunshine, nature's anti-microbic resources, are all present in close packed compartments, like the rooms of a tenement house and the steerage, and hence the multiplicity of forms of infectious bacteria here present.

The recent incubation of a typhus fever epidemic on an emigrant steamer reaching New York quarantine, may easily be accounted for.

Naegali demonstrated theoretically, as long ago as 1870, that only through currents of air are germs taken up from their usual *habitat*—organic material, and that never do they rise from *solutions*, however rich in bacteria. In this fact we have a valuable practical suggestion as to the importance of the spray in diphtheria and other local infectious diseases, and also the aseptic efficiency of washing down the walls, spraying the atmosphere and sprinkling the floor of the clinic previous to operation—a practice executed daily by Leopold.

Moist air never contains anything like the number of germs which are present in a dry moving atmosphere. This factor, second to the absence of the prolific source, organic material, accounts for there not being any germs in the sea air and in the air of mountain tops. *They are held down, in the one instance* by the sea water, in the other by the snow covering the mountain peaks.

As evidence of the effect which stirring up the air has on its bacterial contents, Hesse found that the 3,000 germs to the cb. cm. present ordinarily in a school room, increased to 20,000 during the sessions, and to 40,000 when the pupils were marching out of the room.

Petri found the air of crowded stables to contain 30,000 bacilli and 7,400 mold spores to the cb. cm.

Very extensive has been the belief, both in medicine and with the laity, that the exhaled breath may convey infection.

But Tyndall demonstrated that the air expired almost never contains germs. Strauss found that in bacteria-enriched atmosphere, in hospital wards, of 600 germs inhaled, but very few were exhaled.

Cadeac and Malet conducted the expired breath of sheep, affected with anthrax and chicken-pox, through troughs ½ to 3 meters long, having healthy animals inhale it; but notwithstanding repeated efforts, in no instance could the non-affected animals, placed at different distances along the trough, be made per inhalation to contract the disease.

The lungs do not give up germs from their moist alveolar surfaces. On the contrary, they filter out the microbes and purify the air bacteriologically, as well as with reference to carbon dioxide.

Only through the sputum or expectorated tissue particles, or through mucus secretion, can disease be communicated from the respiratory apparatus. As Strauss states, the respiratory function must tend to diminish the bacteria in an overcrowded auditorium. It may be a source of gratification to a lecturer to know that each listener brings with him a filter in the functions of his respiratory apparatus. With every breath about 500 cb. cm. of air is freed of its bacteria.

The more our knowledge of bacteriology has been extended, the less have become our fears of infection taking place through the air, and relatively unimportant is such possibility as compared with the dangers of direct contact of infectious materials.

Supposing a cubic meter of air does contain 1,000 to 20,000 germs, what is this, as compared with the half million to the cb. cm. present in river water, or the million or more contained in a single drop of pus or other highly contaminated fluid?

Repeated examinations in the von Bergmann clinic have shown that the number of germs which precipitate over an area of a quarter of a decimeter in thirty minutes of time, during the clinic hour, was at most but sixty to seventy, and as for pathogenic bacteria ever being present, it was an extreme rarity. Practical experience has long since demonstrated that the air is comparatively harmless, as regards its capability of infecting wounds.

It is the infection through contact which most engages our attention. To review the wound-infecting germs, we have first of all the erysipelas streptococcus of Fehleisen; second, the Nicolarer, Rosenbach, Kitasato, anarobic, tetanus bacillus, with its numerous ptomaines, "tetanin," "tetantoxin," "hydrochlorin" and "spasmotoxin," isolated by Brieger, capable of producing typical tetanic convulsions when inoculated even in infinitely small doses. Then we have the familiar staphylococcus pyogenes aureus, citrius and albus *of ordinary suppuration, furuncle*, carbuncle, paronychia, phlegmon, and nearly all the cases of *pyæmia*.

Fourth—the frequent cause of specially severe suppurative processes—the staphylococcus pyogenes, whose form and morphological characteristics so closely simulate the Fehleisen streptococcus of erysipelas *that many bacteriologists claim* them to be identical, differing only in location, representing a deep-seated and especially virulent form of the same disease.

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To make practical application of the finding of germs, the first in surgical importance to us, is their presence on the surface of the body. Eberth, in 1875, first discovered that all imaginable forms of bacteria are found in normal perspiration.

We have on the skin all the factors conducive to the development of bacteria. First, there is the uniform temperature; second, moisture afforded by the excretion of the glands; and third, a culture medium is formed by the decomposed epidermis. The axillary space, interdigital folds and the hairy scalp, seem to be fertile soil for every possible form of microbe life. Miller found several varieties in the mouth.

We have here the, 1, lipothrix innominata; 2, bacillus bucallis maximus; 3, leptothrix bucallis maximus; 4, jodoccus vaginatus; 5, spirillum sputegnum; 6, spirochæte dentium; and four ordinary pathogenic bacteria, viz.: 1, micrococcus gingivæ pyogenes; 2, bacterium gingivæ pyogenes; 3, bacillis dentatis virides; and 4, bacillus pulpæ pyogenes.

Throughout the alimentary canal, in the female genital tract to the os internum, in the male urethra, in the upper respiratory passages, in the conjunctival secretion, and in the cerumen of the auditory canal, masses of bacteria are found. With the occurrence of a slight catarrhal process, the germs at once multiply with striking rapidity and number millions in a short time.

The cleansing of the surface of the body and the removal of the promiscuous forms of bacteria, many of which are pathogenic, constitutes the first requirement in asepsis. Not merely the skin of the patient in the region to be operated upon must be cleansed, but the still more infectious source, the hands of the surgeon. This disinfection is not an easy matter. The fat and dirt filling up the pores and epidermal folds in the skin contain a substratum rich in bacteria. A transitory submersion in the strongest sublimate solution has little influence. The fluid rolls in drops off the fat, glistening skin, without even thoroughly moistening it. In the skin and under the nails, the number of the bacteria remain practically unaltered after such a "*would-be disinfection.*"

Of course the absolute demand for a most careful cleansing of the surface needs no further argument. The method to be used may be formulated as follows: First, washing with soap and water as hot as can be borne, for one minute. Second, rubbing and drying the surface with sterile gauze. Third, one minute application of 80 per cent alcohol. Fourth, washing with sublimate solution. Ether in addition may be used where there is an unusual amount of dirt to be removed. The razor is most valuable over parts even not especially hairy, as it removes the superficial epidermal hairs, in which the bacteria aggregate. It cannot be applied so extensively to the scalp, but even here, the area should be shaved from 3 to 5 cm. from the margin of the wound.

An aseptic cleansing of the mucous membranes is less easily effected. Steffeek found that irrigation of the vagina with a liter solution 1 to 1,000 bichloride had not the slightest influence in reducing the number of bacteria. A stronger solution would of course be dangerous. Erosions and acute catarrh, or a general intoxication, might result from absorption. A mechanical cleansing of the rectal, vaginal and oral mucous membrane is to some extent practicable, by means of tepid sterilized water and gauze, or a physiological solution of common salt. The stomach is also permissible of free irrigation. Operations in emergency upon the intestine should be preceded by a preparatory course of catharsis.

All the articles and materials used in the disinfection of the surfaces cutaneous and mucous, must, of course, *themselves* be aseptic. The alcohol, ether and turpentine oil, only by careful handling are kept free from bacteria.

Eiselsberg showed in 1887, that *soap* may be very richly impregnated with microörganisms, and only that which has been boiled in the process of its manufacture should be used.

Most danger of all and the thing to which the least attention has been given are the *nail brushes*, used in removing blood, pus, surface epithelium and all forms of contamination, they naturally become more or less contaminated themselves; being moist, they retain most of the albuminous matter and form a most excellent nidus for germs. Schimmelbusch and Spielhagen in repeated examinations of the nail brushes, in clinics, dissecting rooms and laboratories found in them inestimable myriads of bacteria. That the brushes therefore, merits some attention must be conceded. Brushes in the von Bergmann clinic, are dealt with in the following manner: before being used, they are first, sterilized in steam for 30 minutes; second, they are kept continually *submerged* in $\frac{10}{20}$ corrosive sublimate. Third, after a special contamination, they are placed in very hot and finally in boiling water. In every commode should be placed an especially constructed enamel receptacle in which the brush can be continuously *submerged in corrosive* sublimate. The latter will maintain asepsis by preventing the development of bacteria after the brush has been sterilized in boiling water or steam.

Next in order the instruments themselves, will engage our attention. The impracticability of disinfecting them sufficiently, by means of antiseptic solutions is now clearly proven. The instruments must are found in the air are, first, in winds and other forms of violent agitation of the atmosphere; secondly, in rooms after sweeping, and in enclosed compartments with defective ventilation and bad hygenic surroundings; and finally, they are present in the air of densely populated cities.

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To make practical application of the finding of germs, the first in surgical importance to us, is their presence on the surface of the body. Eberth, in 1875, first discovered that all imaginable forms of bacteria are found in normal perspiration.

We have on the skin all the factors conducive to the development of bacteria. First, there is the uniform temperature; second, moisture afforded by the excretion of the glands; and third, a culture medium is formed by the decomposed epidermis. The axillary space, interdigital folds and the hairy scalp, seem to be fertile soil for every possible form of microbe life. Miller found several varieties in the mouth.

We have here the, 1, lipothrix innominata; 2, bacillus bucallis maximus; 3, leptothrix bucallis maximus; 4, jodoccus vaginatus; 5, spirillum sputegnum; 6, spirochæte dentium; and four ordinary pathogenic bacteria, viz.: 1, micrococcus gingivæ pyogenes; 2, bacterium gingivæ pyogenes; 3, bacillis dentatis virides; and 4, bacillus pulpæ pyogenes.

Throughout the alimentary canal, in the female genital tract to the os internum, in the male urethra, in the upper respiratory passages, in the conjunctival secretion, and in the cerumen of the auditory canal, masses of bacteria are found. With the occurrence of a slight catarrhal process, the germs at once multiply with striking rapidity and number millions in a short time.

The cleansing of the surface of the body and the removal of the promiscuous forms of bacteria, many of which are pathogenic, constitutes the first requirement in asepsis. Not merely the skin of the patient in the region to be operated upon must be cleansed, but the still more infectious source, the hands of the surgeon. This disinfection is not an easy matter. The fat and dirt filling up the pores and epidermal folds in the skin contain a substratum rich in bacteria. A transitory submersion in the strongest sublimate solution has little influence. The fluid rolls in drops off the fat, glistening skin, without even thoroughly moistening it. In the skin and under the nails, the number of the bacteria remain practically unaltered after such a "*would-be disinfection.*"

Of course the absolute demand for a most careful cleansing of the surface needs no further argument. The method to be used may be formulated as follows: First, washing with soap and water as hot as can be borne, for one minute. Second, rubbing and drying the surface with sterile gauze. Third, one minute application of 80 per cent alcohol. Fourth, washing with sublimate solution. Ether in addition may be used where there is an unusual amount of dirt to be removed. The razor is most valuable over parts even not especially hairy, as it removes the superficial epidermal hairs, in which the bacteria aggregate. It cannot be applied so extensively to the scalp, but even here, the area should be shaved from 3 to 5 cm. from the margin of the wound.

An aseptic cleansing of the mucous membranes is less easily effected. Steffeek found that irrigation of the vagina with a liter solution 1 to 1,000 bichloride had not the slightest influence in reducing the number of bacteria. A stronger solution would of course be dangerous. Erosions and acute catarrh, or a general intoxication, might result from absorption. A mechanical cleansing of the rectal, vaginal and oral mucous membrane is to some extent practicable, by means of tepid sterilized water and gauze, or a physiological solution of common salt. The stomach is also permissible of free irrigation. Operations in emergency upon the intestine should be preceded by a preparatory course of catharsis.

All the articles and materials used in the disinfection of the surfaces cutaneous and mucous, must, of course, *themselves* be aseptic. The alcohol, ether and turpentine oil, only by careful handling are kept free from bacteria.

Eiselsberg showed in 1887, that *soap* may be very richly impregnated with microörganisms, and only that which has been boiled in the process of its manufacture should be used.

Most danger of all and the thing to which the least attention has been given are the *nail brushes*, used in removing blood, pus, surface epithelium and all forms of contamination, they naturally become more or less contaminated themselves; being moist, they retain most of the albuminous matter and form a most excellent nidus for germs. Schimmelbusch and Spielhagen in repeated examinations of the nail brushes, in clinics, dissecting rooms and laboratories found in them inestimable myriads of bacteria. That the brushes therefore, merits some attention must be conceded. 'Brushes in the von Bergmann clinic, are dealt with in the following manner: before being used, they are first, sterilized in steam for 30 minutes; second, they are kept continually submerged in $\frac{10}{20}$ corrosive sublimate. Third, after a special contamination, they are placed in very hot and finally in boiling water. In every commode should be placed an especially constructed enamel receptacle in which the brush can be continuously submerged in corrosive sublimate. The latter will maintain asepsis by preventing the development of bacteria after the brush has been sterilized in boiling water or steam.

Next in order the *instruments themselves*, will engage our attention. The impracticability of disinfecting them sufficiently, by means of antiseptic solutions is now clearly proven. The instruments must be sterilized and the choice of method lies between hot air, steam and boiling water. Only the latter of these, will we consider. Spores of many bacilli resist hot air at 140° C. for two hours, and steam for forty minutes to one hour. While boiling in soda, insures *absolute death* of even anthrax, in three minutes. A special apparatus devised by Schimmelbusch, for this method of sterilizing instruments, together with other sterilizing apparatuses, will presently be demonstrated.

The especially commendable feature about this german sterilizer, is its economy of time; and if an instrument happens to drop during an operation, and one that cannot be well dispensed with, we are not obliged to wait for 40 minutes, while it is being sterilized. The instrument is at once thrown into the boiling soda, continually provided in the clinic by the above sterilizer, and in three to five minutes it is taken out aseptic.

Special stress should be laid upon the mechanical cleansing of instruments,as well as all things to be rendered aseptic. Pus, blood and masses of fat, the favorite niduses of organisms, must rigidly be dealt with, by washing with water, soap and brush, before they are put into the boiling soda. After use, they should be carefully dried with alcohol and dry sterile gauze. But with this method there is not the liability of rusting which follows dry heat and steam. Further the instruments are not corroded as with carbolic solution and sublimate. Solutions which even applied *concentrated* does not insure asepsis.

In the construction of the instruments, simplicity should not be lost sight of. All ornamentations and unnecessary fixings of every kind, are contra-indicated on grounds of asepsis. The one piece of steel, may enter into the formation of both the blade and handle, or the latter may be detachable. Instruments made of aluminium, lose one-ninth of their weight, by simply boiling for five minutes. Therefore this material is not to be employed.

Next of interest to us, are the *dressings* to be used, the first quality they should possess is the capability of rapid absorption. Second, they should not contain any bacteria. Third, they should work antiseptically in preventing decomposition of the secretions which they absorb.

Not the dressings which absorbs its maximum at once, and then becomes packed, and remains wet, but material which takes up the secretions gradually, as they are produced and dries out by evaporation, form the ideal dressing. *Sterility* the second prerequisite is absolute and applies to anything which is to come in contact with pure fresh wounds. Both Schlange and Löffler, have found factory gauze and bandages to contain many germs. The necessity of sterilizing the dressings, therefore, follows as a natural consequence. Steam in this instance, is the most efficient means at our disposal.

Schimmelbusch has invented an ingenious apparatus, which may be used for the combined purpose of an instrument and dressing sterilizer. The steam which has been generated in the boiling soda, is utilized in a chamber placed above for sterilizing the dressings. This combination answers admirably the requirements of the private practitioner. But for the more extensive usage of hospitals and amphitheatres, a *special* sterilizer for dressings is necessary. Then the Schimmelbusch apparatus recommends itself, or the Arnold steam sterilizer may be used. These, with another sterilizer for water, presently to be referred to, I have through the kindness of Mr. Wilmot Castle, of Rochester, N. Y., been able to place here, on exhibition, and will be pleased to demonstrate them to the gentlemen present.

The third requirement in dressings, is an antiseptic property. The prevention of the development of germs in the secretions of the wound which serves only too well, the purpose of a culture medium, being the indication to be met. I desire here to lay special stress upon the subject of dry dressing, as it is not in accordance with the usual ideas of wound treatment, as practiced by most surgeons. The more our experimental knowledge has been extended, the firmer has been the position gained by *dryness*, as a condition contrary to a germ development.

There is no remedy so harmless, simple and efficacious in preventing changes in the wound secretion, as dryness occurring of itself by evaporation. Moisture is the essential dependence of bacterial life. Dryness, on the other hand, is the germ's greatest enemy. Let the most favorable nutrient of bacteria, *moisture*, be dispensed with and the organisms cease to grow. Let then the absorption and drying out of the blood, pus and wound secretion be provided for, and the development of germs is *prevented*.

We are indebted to the Esmarch school, especially to Neuber, for having placed the importance of dry dressings in their present advanced position. Schlange in the von Bergmann Clinic, demonstrated by exacted bacterical experiments, how prompt dryness works against every form of germ life. Layers of sterile, gauze wire saturated with bullion and the upper surface impregnated with the green pus bacillis, then the gauze was placed in open glass plates; and evaporation and dryness took place, and only a very scanty development of the bacteria became perceptible. A logical consequence, and one exactly in accordance, with organic life development in any form. Moisture is essential to growth. Instead of leaving the plates open, others of the same series were closed and evaporation of the moisture prevented. The pus formers now proliferated with enormous rapidity and soon formed a greenish film over the entire surface of the gauze. This suggests the practical advantage of facilitating to every possible extent, evaporations of the secretions from the wound.

First, the proper dressing material must be selected. Secondly, the evaporation must not be interfered with, by the interlaying of impervious material as oil silk, or gutta percha tissue. The latter, are of no special advantage, they prevent the wound and dressings from drying out, cause retention of the secretions, prohibiting even perspiration from the surface and inducing in the course of a few hours, the development of offensive odors, and very non aseptic conditions.

These facts are exactly in accordance with our laboratory experience as bacteriologists. As soon as the gelatin or agar tubes lose their surface moisture by evaporation, growth of the colonies cease, and the culture is lost. Hence the necessity of our *capping* the tubes, to favor the development of the bacteria—a procedure analogous to the application of impervious silk over wounds.

In the dressing then,we may combine a parasiticide influence, in *dryness*, an agent which will not injure the tissues locally, or cause general disturbance. It is not with bullion or water that we have to deal, in a-wound, but rather with *albuminous* culture material, which decidedly limits the action of chemicals. Further, evaporation of the carbolic and sublimate solutions, takes place, and combinations form reducing the effectual workings of these agents.

In sublimated gauze after a time, only an insignificant trace of the original antiseptic is to be found. The simple *dry treatment* of wounds, then, is the present position of surgical science, and is reinforced on all sides by logic and rational experience and results.

No oiled silk to promote retention of secretions, no chemicals to irritate the wound, no irrigation to carry germs into it, no pus. Only in two instances is anything additional to the simple dry sterile gauze needed. One is in the case of thick tenacious purulent discharge. The other is the tamponing of cavities, and the latter indication is admirably met .in the iodoform dressing. Non-irritating and non-toxic (in reasonable quantity,) it prevents changes in the absorbed secretions. Notwithstanding the repeated attack made upon it, iodoform retains its place as prominently as ever as our most reliable dressing.

In the case of excessive purulent secretion, acetic acid, oxide, or chloride of zinc may be applied to the wound.

Since it has been shown, that raw cat gut is rich in bacteria, and Volkman had two cases of anthrax develop in a wound sutured with sheep ligature in which animal anthrax is common; further, by reason of Koch having demonstrated that antiseptics dissolved in oil, are ineffectual, we are now required by this progress in our science, to put ligatures and catguts also, through a course of sterilization.

Steam for the silk is the best method, and Schimmelbusch has given us a sterilizer consisting of a small box, containing several spools which can be placed in the steam chamber for thirty minutes, then closed and kept for use as desired. The ends of the thread protrude through openings at the side, so that raising the cover and permitting contamination is *obviated.*

With reference to catgut, the various methods employed are first, von Bergmann's ether sublimate and alcohol, McEwen's chromic acid, Lister's carbolic acid method, then Benkisser's Ravardin process of dehydration and deoleation, then disinfecting by hot steam.

Kocher sterilizes the catgut in juniper oil, Brunnes in Xylol. Of these various methods, that employed by von Bergmann is the one to be recommended, and may be briefly formulated as follows: First, the bottle is sterilized for three quarters of an hour in steam. Second is a process of deoleation, by placing the catgut for 24 hours in ether. Third, submersion in alcohol and sublimate of the following proportions: bichloride 10.0, absolute alcohol 800.0, aq. destillata 200.

The hermetically sealed bent tubes of Fowler, containing sterilized catgut, is also an efficient means of preserving this material aseptic.

The subject of wound drainage deserves just a passing notice. Three methods are embraced in the chapter. 1. The simple opening made through the tissues. 2. The use of drainage tubes. 3. The use of materials. capable of capillary attraction. Neuber advances the theory of an absorbable material so the wound can be closed. Trendelenburg and also McEwen used chicken bones, hollowed out. Bundles of catgut is Watson Cheyne's favored method. Then there are the old glass and gun drainage tubes. Probably the latter are the more satisfactory in the greater number of instances. They permit of being sterilized in boiling soda or steam. Five minutes of the former, 15 or 20 of the latter is sufficient to render them reliably aseptic.

They are preserved aseptic in a five per cent. carbolic acid solution, occasionally renewed. For fastening the tube in place, not the ordinary safety pin, but a sterilized silk thread passed with a needle, rendered aseptic, is to be employed.

The principle of capillary attraction can be utilized best in absorbing the discharges and wound secretion by means of the hydrophiline gauze. Absorbing pledgets for use in the operation are best supplied in the same material. Of course the gauze cannot be used but once, but we should not economize in the use of the materials applied direct to the wound but rather in the external dressing. Only gauze *scrupulously sterile* should be applied. Sponges while apt to be a source of danger, cannot absolutely be dispensed with, especially in operations about the mouth, resections of the jaw and in laparotomies. Absorbing so freely pus, blood and all fluids contaminated or not, they are, *a priori* apt to retain and convey infection and permit only with difficulty of being sterilized.

Anthrax spores were found in sponges, after being 14 days submerged in carbolic acid. The ordinary organisms live for eight days. Twenty per cent. of the sponges prepared for use in the Billroth Clinic were found by Friesch to contain bacteria. The method of preparation of the sponges, employed by Schimmelbusch, consists first in washing them thoroughly in hot water, removing carefully all foreign substances. After several rinsings they are boiled for 30 minutes in 1 per cent. soda solution, then preserved in strong corrosive sublimate. Of course they must be enveloped in gauze, so that the fingers will not come in direct contact with what is to find application perhaps in the abdominal cavity. This method can be regarded as *absolute.* Sponges impregnated with pus and anthrax spores did not react to culture efforts after ten minutes in the boiling soda.

For a continuance of this subject in the "Septic Dangers of Hypodermic Injection, Catheterization and Irrigation of Wounds, the reader is refered to a paper by the writer under the above title published in the *Medical and Surgical Times.*

610 Main St., Buffalo, N. Y.

THE COSMETIC SURGERY OF THE NOSE.

Read in the Section of Surgery and Anatomy, at the Forty third annual meeting of the American Medical Association held at Detroit, Mich., June, 1892.

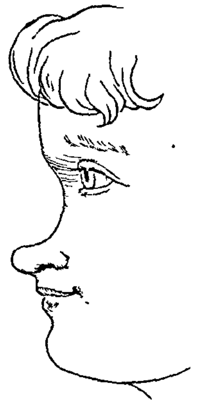
BY JOHN B. ROBERTS, M.D.,

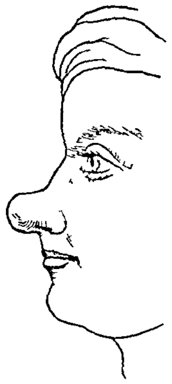
PROFESSOR OF SURGERY IN THE *PHILADELPHIA* POLYCLINIC AND IN THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA.

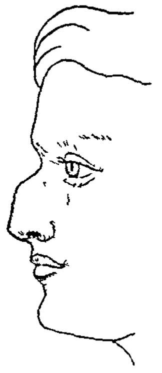
Operative surgery can do so much to relieve disfiguring nasal deformities that perhaps the topic will prove interesting for discussion at this representative meeting. The medical profession fails to fully realize that nearly all undesirable distortions of the nose can be improved or entirely corrected by cosmetic operation. It is, therefore, not astonishing that many persons remain in constant unhappiness because of the consciousness that a congenital or accidental disfigurement is the occasion of impolite stare or impertinent remark.

Operations, often quite trivial, change noses notable for ugliness into organs of symmetrical lines. Such cosmetic improvement naturally makes the patient happier in mind; and not infrequently improves physical health as well, by restoring the normal respiratory and vocal functions of the nasal chambers. Even when more extensive, such operations, if properly performed, carry with them no risk to life. Hæmorrhage of serious kind and violent inflammation are practically unknown; and unseemly scarring does not occur to be an impediment to radical surgical work. Much can be done to the nose, through the nostrils or mouth, without making an incision in the skin of the face. Cuts on the cutaneous surface are inconspicuous, or even invisible, when made in selected spots and with oblique division of the tissues, and when so treated that primary union is secured. Such incisions should be made in the normal lines of the skin, not across them, or should be placed in the situations where shadows, rather than strong lights, usually fall. Careful *asepsis or antisepsis, oblique incision of the skin,* fine catgut sutures and iodoform with collodion as a dressing insure unnoticeable scars, even when the incisions are made in less desirable sites than those just mentioned.

The recognition of tertiary syphilis of the nose and the recollection of its frequency among the educated and refined are requisite qualifications for the successful practice of this branch of general surgery. Many deformities, due to inefficient management of such curable lesions, have come to me for operative treatment. That physicians allow such disfigurements to happen is very astonishing. It should be a rule of practice to give all patients with stationary or chronic ulceration of the interior or exterior of the nose, full doses of mercury and iodide of potassium. The therapeutic test carried on for ten days will usually clear up doubtful cases, if sufficient doses of these drugs are given. A third or a half of a grain of green iodide of mercury taken before meals, and twenty to thirty grains of potassium iodide taken after meals will cure many ulcerated noses. It is the neglect of this active treatment that furnishes the most frightful disfigurements that fall into my hands for cosmetic procedures.


Saddle-back nose.


Tuberous nose.

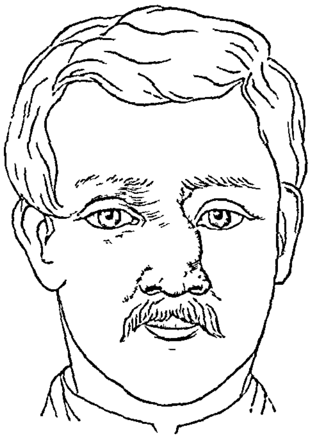

Angular nose.

It is useless to detail fully here the causes which may give rise to nasal *deformity*. Congenital imperfections, such as epicanthus and the flattened and dilated nostril accompanying hare-lip can usually be greatly improved. The Roman nose, the Jewish nose and the nose with an angular prominence on its dorsum can, in many instances, be satisfactorily modified by careful chiseling away of the angular projection of bone and cartilage.

Here a single incision along the edge of the dorsum allows the surgeon to stretch the skin open, so as to apply a sharp chisel to the whole breadth of the nose and shave the bridge into a becoming shape. I have found that the chisel often does best work when used with the beveled side of the cutting edge toward the bone.

Fractures make, of course, all forms of irregularity, and may be accompanied by such blocking up of the nostrils as to require quarrying with chisels and burrs to open the air passages.

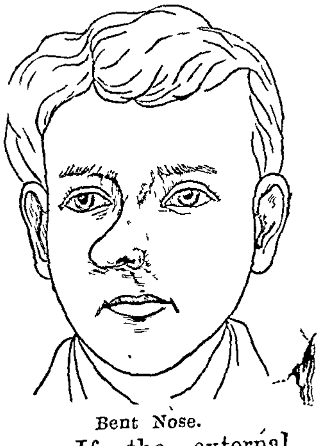
I have seen ugly twists given to the cartilaginous nose by what seems to be an interstitial over-growth of the triangular cartilage of the septum. As this cartilage abuts against bone above and below, such over-growth causes marked curves in its outline, which secondarily displaces the cartilaginous portions of the external nose, giving it an ugly twist.


Twisted Nose.

Efficient treatment of this abnormal shape of the organ must include excision of a considerable portion of the septal cartilage. Sometimes, but not always, this may be done by sub-mucous resection.

Tumors involving the tip of the nose can readily be removed by a V-shaped incision; the nasal lobule is afterwards reconstructed by bringing the flaps together in a judicious manner. The fact that the nares are laid open by the incision makes no difference. The wound can be protected from septic infection by thoroughly cleansing the mucous membrane before operation, and plugging with antiseptic gauze after operation.

The improvement in the patient's appearance made by excision of tubercular excresences of the nose due to acne is most astonishing. Yet, many patients go through life with these deformities, never knowing their remediable character. An insignificant operation will cure promptly the horrible and often disgusting disfigurement. Tumors involving the alæ will often require the surgeon to construct a new *ala from* the cheek after excision of the growth.


Bent Nose.

Syphilitic destruction of the bones and cartilages give us the most difficult cases to remedy because of the actual loss of substance. If the external tissues are intact, however, great destruction of the internal parts of the nose may be successfully neutralized. I have satisfactorily used the tissues of the forehead and upper lip for making a bridge and a columella respectively. In a somewhat

Form of Syphilitic Nose.

similar manner I have propped up a sunken bridge in fracture by turning up a flap cut from the septal cartilage and changing its direction. Chiselling loose the nasal bones and pinching them together towards the middle line will elevate the bony dorsum in saddle-back·nose, and by narrowing it at the same time, give it a relative height which will lessen deformity.

After syphilitic ulceration of the internal structures, the ex- rnal soft parts are often drawn into the nasal cavies by cicatricial contraction and respiratory sucon. To elevate and to keep elevated the external ose, so as to restore the nasal projection and facial nformation, is sometimes quite a problem. If the æ are pared from their abnormal deep connections, y means of a tenotome freely used through the nosils, the cutaneous and subcutaneous tissues can be nfolded and drawn out so as to reconstruct the asal elevation. There may not be sufficient rigidity the tissues, however, to keep them in the desired osition; and if the bony bridge has been destroyed, e problem is more difficult. It has been proposed dissect up the nose by an incision from within the outh, under the upper lip, and to insert a metal ridge or support. This can doubtless be done with uccess. I have accomplished a good deal with plugs the nares, used until the new position was conrmed; have used spectacles of special construction o pinch up the soft tissues into a bridge; and have mployed plastic devices with much satisfaction.

The straightening of crooked noses can be accomlished only after very free separation of the cartilge and skin from the nasal and superior maxilliary ones. This is best done with a tenotome passed nto each nostril in turn. With it the mucous memrane is pierced and the tissues freely cut away from their bony attachments. The septum is then divided by knife or saw, and the nose forcibly bent into the traight position. A great deal of force should be pplied so as to twist the parts completely out of their bnormal relation. It is always well to over-correct he distortion because there will be a tendency of the ld condition to return. If the nose is bent to the ight, the surgeon should give it a marked twist to the eft of the middle line, and similarly to the right in eft deviations. After this has been done, steel pins, ne and one-half inches long, are thrust through the kin just below the nasal bones, and through the columella at the margin of the anterior nares, and used s levers to hold the nose in its corrected position. The pins should be retained about ten days or two weeks.

I have not considered the more elaborate procedures for reconstructing new noses from the arm, finger and forehead, nor gone into the present topic in great detail, because this paper is only suggestive. A consideration of all the operations of a cosmetic nature practicable upon the nose would make this communication much too long. I have, moreover, in another place, discussed many matters pertaining to this branch of surgery ("The Cure of Crooked and Otherwise Deformed Noses," Philadelphia, 1889). At this time I especially desire to call the attention of the medical profession to the fact that much can be done to aid sufferers from nasal disfigurements, and that those with bent, twisted, angular, tuberous or syphilitic noses should be given to understand that the condition is capable of great cosmetic improvement. The surgeon must use in this work his knowledge of plastic surgery, and adapt his operation to each individual case. Much more can be successfully done, in an operative way, to the nose than is usually believed.

THE SIGNIFICANCE OF AN HERNIAL SAC.

Read before the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June 7, 1892.

[The name of the author does not accompany this paper.]

Hernia is full of interest; is fraught with imminent danger, and may come when least expected.

Modern progress has given a new impulse to early diagnosis. To recognize hernia in embryo is to anticipate all its perils. Hernia and sac seem indissoluble. Unhesitatingly the student of medicine associates the two. In whatever situation it occupies, a hernia is composed of a sac and contents. Practically this teaching is just a little misleading. For years past it has been my aim to impress my class with the importance of early diagnosis, that is, diagnosis before the formation of a sac, for with the sac come as probabilities all the calamities incident to the infirmity, viz.: inflammation, irreducibility, incarceration and strangulation; disasters embodying the significance of an hernial sac. The palliative cure of hernia is the permanent vacation of the sac; the radical cure, the extinction of the sac. Apathy on the part of the patient together with absence of intelligent solicitude on the part of the physician permits the formation of a sac. thus entailing all its incident hazards.

All mankind are, in the nature of their anatomy, predisposed to hernia, differing the one from the other simply in degree. The fibre of some men is short and tense; of others, long and lax. The abdominal wall is weak at certain points in all. The common habits and necessities of life impose oft repeated diminution of the capacity of the abdomen; but most of all feats of agility, such as jumping, lifting heavy weights, etc., test out the weak places, when points of least resistance necessarily bulge. Tenacity and elasticity of tissue in the standard organism may reinstate all, but there is a limit. The combined forces of the abdominal muscles concentrate against the feeble points of the parietes, the equilibrium is lost, a sense of weakness is felt, and the necessity for support is immediately experienced. All the organs alike, even those most distant. as well as those most fixed by mesenteric folds are forced towards the hernial sites. The cæcum has been found in an umbilical hernia, in an inguinal hernia on the left side. Anatomical knowledge alone would never have led us to entertain a suspicion of the possibility of these occurrences, but facts warrant the inference that there is no necessity for supposing elongation of the visceral ligaments a predisposing cause of hernia.

The ligaments of the liver, those of the spleen and the various membranous bands of the intestines in general, would be but feeble means of fixing such parts in their respective situations were it not for the fact that the abdomen is always completely full. The containing and contained parts react upon and reciprocally compress one another. It is by the effect of this moderate but equal and unremitting pressure that all the viscera mutually support each other. Doubtless the ligaments became stretched and permanently elongated as the result of repeated or continued descent of the intestines; but we are not cognizant of any facts to prove a congenital condition of the kind above alluded to. At first sight this circumstance regarding the elongation of the mesentery may seem to have very slight practical value, and that the cause of hernia is rather in a want of equilibrium between the pressure of the viscera and the resistance of the abdominal parietes, yet persons in whom an hernial sac exists, state that they are most troubled with the descent when out of health, when generally relaxed. If it be an anatomical truth that an elongated mesentery is a preliminary to hernia, the radical cure should begin by abridging it. Certainly the determining condition of hernia seems to be the relative preponderance of the predisposing and existing causes.

Practically the most important period in the progress of hernia is when weakness is felt and slight fullness is observed in the hernial site. At this period the parietal peritoneum pushed before the protruding viscus has a conical shape, therefore strangulation would seem to be impossible. Soon, however, the peritoneum so protruding reaches the connective tissue beyond the tendinous rings, there being less resistance it expands into a rounded shape when that portion corresponding to the resisting rings is relatively smaller. Now for the first time a sac appears, when strangulation is possible. For a time after the hernial sac acquires a neck, body and fundus, the neck is puckered within the grasp of the tendinous rings; if at this time the protruded peritoneum is returned, the puckering disappears, thereby effacing the orifice of the sac, cure being complete. If at this period strangulation occur, the nip is at and by the tendinous borders. At a later time the orifice of the sac itself takes on organization which sufficiently explains all the phenomena of which it is the focus.

The period prior to the organization of the sac is, as we have written, the most important in the history of hernia. For a time, even if the tumor be quite prominent, the neck of the sac is only folds of peritoneum which are readily obliterated on the reduction of the mass. Later the peritoneal plaits adhere, the orifice of the sac becoming an independent structure, or a permanent and distinct organ, annexed to the peritoneum. From this moment the orifice has an evolution peculiar to itself, becoming the seat of remarkable changes. The serous surfaces are not alone the seat of the action relating to the organization of the orifice, for subserous connective tissue changes of no less interest take place. The adipose tissue disappears although the person be fat. The connective tissue is transformed into an highly vitalized, vascular structure, changing later into a fibrous layer which interlacing in every direction comes to resemble the dartos. This dartos-like layer having contractile properties may play its part in obstruction and strangulation, certainly this dartos structure accounts for the constant tendency to contract which characterizes the orifice of the vacated sac, as well as the tendency to obliteration after herniated organs cease to act upon it. The contractile quality of the sac tissue which promises so much in the direction of cure provided the prolapsed organs are kept up is a constant menace when precautions are neglected. Incarceration, inflammation and strangulation are penalties annexed to inattention to the truss. From the moment a hernial sac is evolved begins the formidable array of disasters which constantly beset the victims of hernia. Again, the dangers increase apace till the offending organ is obliterated by its own contraction or removed by surgical aid. Early diagnosis of hernia, the prevention of sac, seems the only solution of the difficulty. The practicability of this most important point is the question. To engage the coöperation of the patient and to awaken the profession to the importance of early attention is the only hope.

The diagnosis of hernia is quite as easy at an early period as later; the symptoms the same, differing only in degree. The same subjective and objective signs, the sense of uneasiness, the feeling of weakness, the impulse on succussion of the abdomen, the comfort of recumbency and aggravation on assuming the erect posture, the surgeon readily demonstrating to himself the opening through which the protruding parts play.

Unfortunately we think of hernia as an established infirmity, sac and contents always in our minds. We would shift the interest in this subject to the period anterior to the formation of the sac, when the disease is new or just developing. We would have hernia recognized before it has grown old, an exaggerated form of disease. If early diagnosis is so important to the success of a surgical operation, how much more important when early diagnosis anticipates the necessity of an operation, nay more, prevents the disease, the surgeon by a simple mechanical contrivance restoring the patient. Unfortunately the surgeon does not see cases of hernia till the sac is perfected. The neglect of the patient and the want of intelligent concern on the part of the practitioner at a sufficiently early period fortunately or unfortunately furnish the data for the larger portion of surgical literature which is the boast of our profession.

Preventive medicine is the goal. A knowledge of causes and their apprehension must however be the aim to the end.

Agencies of injury and disease once established, the relative impotency of our art becomes a painful realization.

The Mississippi Valley Medical Association will hold its eighteenth annual session at Cincinnati, Wednesday, Thursday and Friday, October 12, 13 and 14, 1892, under the presidency of Charles A. L. Reed, M.D., Cincinnati. An excellent programme, containing the best names in the valley, and covering the entire field of medicine, will be presented. An address on Surgery will be delivered by Dr. Hunter McGuire, of Richmond, Va., President of the American Medical Association. An address on Medicine will be made by Dr. Hobart Amory Hare, Professor of Therapeutics and Clinical Medicine, Jefferson Medical College, Philadelphia. The social as well as the scientific part of the meeting will be of the highest order. The officers of the Pan-American Medical Congress will hold a conference at the same time and place.

The next meeting of the Kansas State Society will be held in Topeka, in May, 1893.

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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, AUGUST 20, 1892.

TWO MISTAKES.

A prominent professor in a recent address, asserted positively, that mistakes by the modern physician were always personal reflections on his training and judgment. This recalls two remarkable cases never published, that are wide exceptions to this strange assertion.

Over thirty years ago a warm controversy was carried on by the leading surgeons of this country, on the question of union from fracture of the neck of the femur. Intra-capsular fracture was considered never to heal by bony growth. All the cases which seemed to prove the contrary were considered partially within and without the capsule. Specimens to prove either side of the question were sent for examination to all leading surgeons, and opinions were given freely. Exhaustive papers were read and debated in the societies. The leading surgeons who believed in bony union within the capsule procured a very remarkable specimen, at the London University Hospital, which was submitted to all the leading London and Paris surgeons, and declared to furnish conclusive evidence of fracture and bony growth within the capsule.

This and other less marked specimens were examined by the surgeons of this country, and accepted as proving the fact, by the most critical opponents. The controversy seemed settled, when a country physician who was examining the specimen, recognized a disparity of weight compared with other similar bones. A closer study revealed a plaster of Paris head joined to the bone, so ingeniously as to escape the most critical examination. This specimen had been studied by over twenty of the leading surgeons of the world, and its external appearances had been accepted as unmistakable proof of bony growth of intra-capsular fractures of the neck of the femur.

Why these surgeons had not discovered this fraud was a mystery. Many of them were, and are yet the great fathers of medical science, whose names and works will live far down into the future.

The second instance is more modern. A nervous Irish girl had intercourse while coming to this country. A few months later she exhibited many signs of pregnancy, and was ruthlessly turned out on the street. A young doctor of wealth and leisure became convinced that it was not pregnancy, and accordingly had her examined by many leading specialists, each of whom differed with him. He then took her to some of the leading authorities of the great medical centers of the country. The diagnosis of all was pregnancy, with some obscure complications. Finally the girl died from peritonitis, and a post-mortem revealed nothing, with no indication of conception or change of the uterine walls. The only possible explanation was that most of the symptoms were mental, and in support of this it was ascertained that the girl had read in a handbook of medicine the various symptoms of pregnancy, and firmly believed she was in this condition. The peritonitis of which she died was of the same character. Thoroughly trained physicians in active practice fully recognize the possibility of mistake and error in the diagnosis, and are never dogmatic; and are also slow to condemn any one who has formed a wrong opinion.

Therapeutical differences of opinion are a part of the individuality of the man. Differences of diagnosis date from the perception and power of reasoning, together with experience, memory and training. Of necessity it will vary widely, especially if any obscurity or complications of symptoms are present. One of the most eminent London physicians had a clinical clerk who recorded all the facts of the case, which were read over at leisure and studied before an opinion or diagnosis would be given.

Physicians should exercise the same caution and care in forming opinions that judges display. Occasions rarely occur in which time cannot be taken to study and consider the meaning of the symptoms. It is no mark of greatness to be able to diagnose the case at once, or in the popular sense see through the case at a glance.

It is no sign of ignorance or incompetency to fail to understand the case. To teach students that positive diagnosis can be made in all cases is an error. The rapid increase of means and appliances for ascertaining facts of disease and diseased conditions require more study and training, and capacity for deductive reasoning. The older physician who makes a diagnosis often by mere intuition, may be quite as accurate as the younger man with a vast array of facts from instruments of precision. In one case we can follow and correct such reasoning, but in the other we cannot. CARLYLE said mistakes and errors are inseparable from every human being, irrespective of all conditions. No field of thought requires more accurate perception and critical reasoning than that of medicine. The judge realizes that his opinion and the facts on which it is based will be reviewed by others, and it is a matter of personal pride to be correct. In a higher sense the judgment of the physician should be sustained by the progress and history of the case. A court of last resort will finally pass on his judgment, beyond the selfish levels of pride and personality.

THE LOCALIZATION OF TUBERCULOSIS IN THE HERNIAL SAC.

One of the most interesting examples of the localization of tubercular infection has been brought to our attention through the very novel contribution of Loutham in the *Medical Chronicle* April 1892. In one case a consumptive had a large scrotal hernia which was found on operation to be irreducble from tubercular peritonitis in the sac. The sac and testicle were removed together with complete recovery. In the second case a six year old boy without evidence of tuberculosis elsewhere was operated on for hernia. The sac was found covered with milliary tubercules and it was extirpated high up with prompt recovery.

Bruns[1] has lately studied thirteen cases of tuberculosis in the hernial sac. Of these seven were recognized as primary, while the remainder were simply part of a general peritonial tuberculosis.

It must then be concluded that primary (so called) tuberculosis of the hernial sac is simply a secondary focus. The localization of this focus depends on a diminished resistence in the hernial sac, due to mechanical causes. The primary focus being probably in the pulmonary side of the circulation.

The treatment of these cases is to be determined by the experience found in general peritorneal tuberculosis. Tuberculosis of the sac is not a certain indication to the radical operation. It calls for the complete extirpation of the sac and iodoform medication. It is not a certain indication to operation in a general tuberculosis. The recoveries in the fifteen cases now reported are encouraging.

ELECTRICAL EXECUTION.

Another electrocutive experiment has been successfully carried out in New York State. The period of contacts was thirty-seven seconds; twelve, ten, eight and seven seconds for the four applications. There was no burning of the flesh and no great muscular contraction during the contact. There were no disfigurements found after death as a result of the contact of the electrodes. The electrical current used was equal to 1,560 volts at seven ampères. The date of this last, and least objectionable electrocution was August 2, and the place was Clinton prison. The disagreeable features of this form of judicial death have been reduced to a minimum, in the light of the earlier experiences, especially last year at the Sing Sing prison. All public clamor against the method may be said to have been effectively stilled, for th present at least. Now it remains to be seen if other States will adopt the measure, in next winter's legislatures.

EDITORIAL NOTES.

New York City and its Croton Water.—The *New York Medical Journal* remarks editorially on the deterioration of the croton water. In its unfiltered stata, its color and odor are not such as would inspire confidence. Albuminoid ammonia is reported by the official chemists to show a decided increase, while the presence of vegetable matter in excess is revealed by the microscope. If this condition persists a reported increase in cases of enteric fever must be expected among those who use unfiltered and unboiled water.

Headache Treated by Chloralamid.—The following formula, for the treatment of headache and insomnia from exhaustion, has been recommended by Gallani in *Medicine Moderne:*

Chloralamid, 30 grains.
Hydrochloric acid, dil., 5 drops.
Syrup, 2 drachms.
Distilled water, 2 ounces

Fifteen grains is the dose recommended, to be repeated, although thirty grains would probably be prescribed by some others who have had an experience with chloralamid as a hypnotic. Cold water should always be used in making this and similar solutions, since the drug is decomposed when hot water is used. By the addition of a little alcohol or spirituous liquor, in which the drug is readily soluble, the successful preparation of these solutions is ensured. The subcutaneous injection of a four per cent. solution of chloralamid has been found efficient against insomnia and abdominal pain, such as alleged "hepatic colic" and secondary neuralgia due to carcinoma of the rectum.

Life Insurance without Medical Examination.—It is stated that three London companies have so modified their rules that those applicants who desire to avoid medical examination, can do so by the payment of a specially arranged scale of premiums. The same step has been under consideration by several of our American companies, with the result of declining to go into the venture until the success of the British companies shall have been proven.

The *Chicago Medical Recorder*, edited by Dr. Archibald Church, and previously published by W. R. Keener of Chicago, is now being published by the M. H. Kaufmann Medical Publishing Company.

DOMESTIC CORRESPONDENCE.

To the Editor of the Journal of the American Medical Association:

Your editorial in The Journal of Aug. 6, entitled "The Surgeons at Homestead" is misleading and calculated to cast censure upon worthy men, engaged in the discharge of a most unpleasant duty.

The punishment inflicted upon Private Wm. L. Iams, Co. K. 16th Reg., for shouting "Three Cheers for the man who shot Frick" was not greater than the offense merited. All, good, law-abiding citizens who are conversant with the facts, and with the lawless spirit which pervaded the community at Homestead, at the time of the strike, and the danger of this same spirit extending to the soldiers, acknowledge the truth of the above statement. And the fact that Lieut. Col. Streator was last night unanimously, re-elected Lieutenant-Colonel of his regiment proves that this is also the opinion of his brother officers.

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[1] Tuberculosis herniosa Beiträge zur Klinchirosgie Bd. IX.

Private Iams had proven himself, on former occasions, to be a bad soldier. At Moreland, two years ago, he was punished for insubordination. At Kensington, one year ago, he was again punished for breaking through the guard. At Homestead on Thursday (two days before his last treasonable conduct) he had slept on his post, and on Friday was punished by being compelled to carry a log on his shoulder. On the next day (Saturday) when our whole community was shocked by the murderous attack upon Mr. Frick, this same man stood up in his tent, and shouted "Three cheers for the man who shot Frick." This in the presence of our citizen soldiers. It is much to their credit that the remark was received with indignation. Iams was asked to recall the expression which he emphatically refused to do, and it was then that the order was given "that he be tied up by his thumbs, and that the surgeons stand by, and see that no harm befel him." In the army, or elsewhere, when punishment is administered to a culprit, it is customary, as it is humane, to have a physician present to see that the punishment is not carried farther than the criminal is able to bear. The tieing up of a soldier by the thumbs, is a mode of punishment which has been sanctioned in the army by long usage. In the case of Iams the surgeons were ordered to stand by and see that *no harm befel him*. This they did. They saw to it that he could stand in such a manner that he could take all the weight of his body, when he so desired, upon his feet. They counted his pulse, and watched his respiration, and when in their opinion he began to show symptoms of being physically injured, they ordered the punishment stopped. Surely there was no cruelty or brutality exhited by the surgeons.

In your Journal you say, "it is not the province of this Journal to discuss the action of the Colonel in ordering the punishment which he did. But the actions of the surgeons becomes a fit subject for discussion by the medical profession. It is generally admitted that medicine is the healing art, and that the great duty of the physician is to relieve pain, and not to inflict it, except it be for the purpose of saving life, or cutting short other suffering." Again, you say, "we care not what military law may be, *it was the duty of those surgeons to as medical men, to refuse to carry out the orders of the Colonel, to tender their resignations on the spot, if necessary, or even to suffer punishment for insubordination.*

These remarks would have some little pertinence, if the surgeons had been ordered to inflict the punishment, but they were not so ordered, they were only ordered "to stand by and see that no harm befel the culprit." Surely so far as the surgeons were concerned this was in the direct line of their duty. To have refused would have been to be untrue to their office, to the medical profession and to the culprit. All of the actions of the surgeons were on the side of humanity. Being personally acquainted with the surgeons at Homestead I can vouch for their ability as surgeons, and character as men. They knew their duties, and are incapable of doing any act of cruelty. There is a maudlin sentimentality in the community in regard to criminals and their punishment, which, unless checked, will destroy all law and order.

Iams deserved the punishment which he received and the surgeons at Homestead, should have been commended, instead of being censured for the manner in which they discharged a most disagreeable duty. J. B. Murdoch.

Pittsburgh, August 10, 1892.

In our reference to the surgeons who were present at the time of the punishment of private Iams, we fairly reflected the sentiments of the people as shown by many columns of comments in the current press. In no way do we justify Iams for his senseless and perhaps criminal act, but as war did not exist and the town of Homestead was not under martial law, and the regiment one of citizen soldiers, under orders to preserve the peace, the offense was not of the grade to demand such a sentence without a trial by court martial. The conditions were extremely exasperating, and should have been an occasion for the exercise of a cool judgment, rather than the autocratic power of an impulsive despot, which placed the surgeons in an unpleasant dilemma. A refusal to obey the command of a superior officer in the army is a most serious breach of military discipline.

Duty to obey an officers order, which involves such severe physical punishment as to require a surgeon to take a professional part in executing the sentence, is questionable. This is undoubtedly the case, where the culprit has had neither semblance or pretense of trial, in a time of peace, and is certainly an occasion to call for a protest not only from the surgeons immediately concerned, but from the profession at large.

After the associated press report of this unfortunate affair the *Medical Review* comments as follows:

> Such is the story which is told. Eminent legal authority claim that the punishment was not only uncalled for, but unjustifiable and illegal. We have nothing to do with this phase of the question. Whether legal or otherwise, the surgeons had no moral right to act in the position of *participes criminis* in a torture whose equal can only be found in the annals of the Inquisition. The medical officers degraded their profession to the extent of not only countenancing such an infamous act, but of watching the miserable victim to see how much torture he could bear. They felt his pulse and watched his heart until he was limp and apparently unconscious. They did not have the manhood, much less humanity, to protest with the brutal Colonel against such unheard of punishment. These are the men to whom delicate women and puny children are to be confided! These are the kind, ministering angels who are to smooth the pillows of the afflicted and assuage the pains of the diseased.
>
> We have more respect for the American Indian after this. The Chinese torture as a custom can no longer be revolting. These people have been educated to their peculiar methods, and only employ them on their enemies or on criminals of the deepest dye: The medical officers of the Tenth Regiment Pennsylvania National Guards watch a fellow man and citizen suffering the tortures of the damned to please a Colonel who should be relegated to a position where he could be watched by a Humane Society.
>
> In whatever light this outrage is looked upon, there is no excuse for it. But the greatest dishonor, the greatest obloquy and shame is surely deserved by the self-styled physicians who could so degrade, so besmirch their profession as to drag it in the mire as they have done in the case of Private Iams. The incident will remain a lasting monument to the disgrace of medicine, more especially of American medicine, and it will take much to wipe out the stain which has thus been placed upon a large, honorable and humane body of men.

The editor of the *Lancet-Clinic* says:

> The present trouble at Homestead has been prolific in producing unpleasant and painful spectacles; but it seems to us that there has been nothing so barbarous as the punishment inflicted upon the soldier who dared to suggest the propriety of giving three cheers for the assassin of Mr. Frick. From a perusal of the account one would almost be led to the belief that the days of torture and thumb screws had not passed away.
>
> While we cannot sympathize with the sentiment of the man who desired to applaud attempted murder, much less do we sympathize with the brutality of tying a man up by the thumbs until he faints. Such barbarity should have no place in a civilized community, and the Colonel who ordered such punishment has disgraced his manhood and shown himself a bully and a tyrant. Further than this, we do not

believe that legal justification for this act could be obtained from any right-minded judge.

The medical men figured in a very unenviable light in this affair, and the part they assumed is a degrading one for any member of our humane profession to undertake. We are sorry they allowed themselves to act as torturers to his majesty, the Colonel of the regiment, and believe that a second sober thought will convince them that they allowed themselves to be made parties to a despicable and cruel punishment. Doctors, we cry shame upon you!

SELECTIONS.

Venereal Disease in Paris and Brussels.—Among 2,941 registered prostitutes in Paris, arrested for various reasons in 1891, 251 were found to be suffering from veneral disease. Of 2,637 clandestine prostitutes arrested under similar circumstances, 1,153 were infected. The proportion of disease was therefore about 8½ per cent. among the registered women, as against 43 per cent. among the clandestine prostitutes. In Brussels, where the regulations are very strict, the proportion of disease is somewhat less among the registered women, but among the clandestine prostitutes it has recently increased to such an extent that an additional ward has had to be opened in the St. Pierre Hospital for their reception.

Female Physicians and the British Medical Association.—According to the *British Medical Journal* for July 30th, a resolution was passed at the recent meeting of the British Medical Association at Nottingham, expunging a section of the articles of association that provided that no female should be eligible for election as a member of that association. The question was first agitated in 1878, when it was decided, by a large majority, to make no change. This recent action reflects credit on the association.

The Treatment of Chronic Suppurative Otitis. By Dr. H. Gradle, Chicago.—His observations are based on about 600 cases, and from a careful study of the results of treatment he formulates the following conclusions: "As long as the pus of otorrhœa smells fœtid, the treatment employed has exerted no curative influence on the disease," and conversely "the first sign of curative influence of any treatment upon the course of an otorrhœa is upon the odor of the discharge." To test for the odor, the meatus is mopped out with cotton on a probe, and the surgeon smells what is removed. He then recommends thorough syringing and the application of some form of antiseptic, such as boric powder, and on the following day to again test for the smell; and if the odor persists, the continuance of the same form of treatment will prove of no benefit. Unless the stagnant pus be thoroughly removed, the use of boracic acid or any other disinfectant cannot make the discharge odorless. The necessity of thorough cleansing of the meatus, tympanum, Eustachian tubes, etc., is insisted upon as being the first essential, and next the application of an antiseptic in such a condition that it can freely enter the various crevices. —*Archives of Otology*, 1892.

Antrectomy as a Treatment for Chronic Purulent Otitis Media. By W. Arbuthnot Lane, M.B., London.—Here Mr. Lane emphasizes the fact that the antrum has no anatomical or physiological relationship with the mastoid process or its cells, but that it is situated in the petrous bone, and is, physiologically and anatomically, a part of the middle ear, and that it plays a very important part in the pathology and causation of chronic purulent otitis media. He opens the antrum by the use of mallet and gouges, then scrapes the cavity with sharp spoons. Subsequently he removes overhanging bone, so that the gouged inner wall of the antrum is the apex of a cone. The paper is carefully written and well worthy of perusal.—*Archives of Otology*, 1892.

NECROLOGY.

Dr. Thomas Godrich, of Gravesend, New York, died July 27, 1892, of diabetes. He was a native of London, a doubly qualified practitioner of that city for many years, and an occasional attendant upon the Prince of Wales' family at Sandringham. He as was also the possessor of appointments in the Royal Volunteers, in the Humane Society, in the Fulham Health Office, in asonic relief, public vaccination and the Abbey Wood Infirmary, in the south-western part of London. He came to this country in 1885, and was in his fifty-fifth year at the time of his death.

Dr. Phillip Markbreiter, of Vienna, died July 20. In 1860, he founded the *Midizinal Halle,* which more recently received the title of *Wiener Medizinische Presse.* He was co-editor with Schnilzler of the *Medizinisch Chirurgische Rundschau.* About 1870, he withdrew from these and some other journals that knew more or less of his editorial work during many years.

Dr. Antoine Ruppaner, a former member of the Association, resident at Boston and New York, died August 2 at Pittsburgh. He was a native of Switzerland, having been born there about the year 1825. Professor Agassiz, of Cambridge, was interested in young Rüppaner and through his instrumentality took the Harvard medical degree in 1858. He began practice in Boston, adopting laryngology as his specialty, being among the pioneer specialists of Boston. About 1866 he removed to New York, locating for office practice at the fifth Avenue Hotel. Latterly he removed to the Hoffman House. His offices were replete with objects of art, finely bound books and choice curios. He was a bachelor and without heir of near kin, although leaving an estate valued at over half a million. His contributions to the journals were among the first of their kind in this country; and in 1868 he published a small handbook on laryngology and rhinoscopy on diseases of the throat and nasal passages. This latter was probably the first brochure, indigenous in this country, at a time when even the term rhinoscopy had a strange and uncertain sound to American ears.

MISCELLANY.

Medical Society of the Missouri Valley.—The annual meeting of this Society will be held at Council Bluffs, Iowa, September 15, commencing at 9 a.m. and continuing in session one day. Titles of papers should be sent prior to September 1, so they can appear on printed program mailed members at that date. F. S. Thomas, M.D, Sec'y.

Dr. W. Thornton Parker has accepted the invitation of the Faculty of the College of Physicians and Surgeons, Chicago, to deliver the course of lectures on Medical Jurisprudence during the approaching Session, 1892-3.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from August 6, 1892, to August 12, 1892.

Col. Charles T. Alexander, Asst. Surgeon-General U. S. A., is granted leave of absence for twenty-one days, to take effect upon the completion of the bond of Capt. Harry O. Perley, Asst. Surgeon U. S. A.

Col. Charles Page, Asst. Surgeon-General U. S. A., leave of absence granted is extended one month.

Capt. William C. Gorgas, Asst. Surgeon U. S. A., extension of the leave of absence granted is further extended twenty days.

Major Charles Smart, Asst. Surgeon U. S. A., is granted leave of absence for four months.

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ORIGINAL ARTICLES.

THE POWERFUL EFFECT OF SULFONAL IN ARRESTING THE CRAMPS OF FRACTURED LIMBS, AND REFLEX SPASMS FROM OTHER CAUSES.

Read before the Section of Surgery and Anatomy, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June, 1892.

BY EDWARD ANDREWS, M.D.,
OF CHICAGO.

Sulfonal was discovered only six years ago by E. Baumann. Chemical nomenclature has evolved for it the frightful name of diethyl sulphon-dimethyl-methan. Prof. A. Kast first reported on its qualities in *Die Berliner Klin. Wochenschrift*, in 1888, or four years ago. About three years ago my attention was turned to its remarkable power of arresting the spasms of fractured limbs by having given a dose for its supposed hypnotic effect, and finding instead a strong antispasmodic result. I published my observation not long afterwards in a short article. Since then I have continued my experiments, and now offer a condensed statement of the results.

It is curious that the numerous writers who have reported upon this new drug have almost uniformly confined their attention to its sleep producing influence, and overlooked its remarkable antispasmodic power. In fact Dr. W. F. Shick, writing in 1889 to the *Journal of Nervous Diserses* went so far as to say that the drug has no influence on motor nerves, nor on the muscles. Four or five writers, however, have caught slight glimpses of its antispasmodic power.

Forster, who is said to have administered not less than eighteen pounds of it, remarked that it is chiefly a motor depressor.

Roubinovitch in one case cut off a paroxysm of spasmodic asthma, by doses of fifteen grains.

A. S. Faulkner, of India, reported one case of chordee arrested by it.

J. M. Coates reported the greatest benefit in epilepsy, and in obstinate hiccough.

J. A. Jeffries reported five cases of chorea rapidly cured by the article.

My first observation was upon a case of painful cramps from a recently fractured femur. Morphine relieved the patient as long as he could keep awake, but as soon as he became drowsy the cramps returned. On changing to suflonal in fifteen grain doses the spasms were completely, arrested both in the waking and the sleeping condition. Repetition of the treatment in other cases of fracture showed always the same result.

A gentleman in a railroad accident received a slight fracture of the spine without any compression of the cord. He was harassed whenever he fell asleep by cramps of the inter-costal muscles adjacent to the injured vertebra. Sulfonal in fifteen grain doses arrested the trouble completely.

I may remark here that the drug is slow in its action, and where the cramps are only nocturnal, it is necessary to give either a large dose two or three hours before the sleeping time, or else to keep up the effect by using moderate doses three times a day.

I found one physician using this medicine to arrest the spasms of ejaculatory muscles which cause nocturnal emissions of semen. He gave six grains three times a day, and claimed excellent results. At his suggestion I tried it with good success, increasing the dose however, to eight grains.

From analogy I think the remedy will act well in cases of premature ejaculation in copulation, but I have not yet tried it for that purpose.

I have used sulfonal to arrest two cases of obstinate hiccough.

A gentleman was troubled for many years with nocturnal cramps of the legs and thighs, increasing slowly as his years advanced. Fifteen grains of sulfonal taken before retiring always prevented the spasms. After two months he found that a single dose would prevent the trouble for nearly a week. In about ten weeks more the course of the trouble seemed to be cured, so that he has now been a long time without requiring or taking any of the remedy.

A vigorous young man engaged in superintending the construction of a building, fell 32 feet, striking obliquely on a slope of timber, causing a severe contusion of the right sciatic nerve, without fracturing any bone. The thigh and leg of the injured side kept up a constant and painful jerking motion, resembling somewhat the movements in chorea. Two doses of sulfonal of fifteen grains each completely arrested the distressing movements.

It seems that the antispasmodic power of sulfonal is of more value than its sleep producing influence, and that it will prove of immense value in many cases in which no one has yet thought of giving it a trial.

No. 6 Sixteenth St., Chicago.

Dr. Brooks, of Iowa, stated that he had sustained a fall, resulting in a severe synovitis, which caused sudden spasmodic contraction of the leg during sleep. Sulfonal was prescribed and the spasms relieved from the first.

Dr. Murphy reported the case of a pregnant woman who suffered much at night from cramping in the legs. He prescribed sulfonal and found that one dose was usually sufficient to give relief. He has used the drug in two other cases with excellent results.

Dr. James A. Work, of Indiana, has a patient to whom he has been giving sulfonal for rheumatism, attended with cramps of the legs at night. The remedy acted admirably, but he had often been asked if there was not danger of a habit being formed. It was a relief to know that as the case progresses less of the drug is administered.

Dr. J. I. Strippmatre, of Philadelphia, stated that he had found the drug useful in the low nervous form of typhoid fever, accompanied with jactitations. He related a case in which there had been no sleep for six days. Twenty grains of sulfonal were given and the patient slept for twenty-four hours, only being aroused to take food. Recovery was thenceforth uninterrupted.

SECTION OF OPHTHALMOLOGY.

RECORD OF THE MINUTES.

The sessions of this Section were held in the morning and afternoon of June 7, 8, 9, and 10, 1892, in the club room of the Hotel Cadillac, Detroit, Mich.

TUESDAY JUNE 7.—AFTERNOON SESSION.

Dr. J. L. Thompson in the chair. Meeting called to order at 3:30 P.M. The Chairman opened the meeting with an address entitled "How Shall We Make the Meetings of Our Section More Attractive and Helpful?"

After the reading of the paper the reports of committees was the next order of business. No report having been received, the reading and discussion of the papers followed.

The first paper, entitled "Gradation of Lenses," was read by Dr. Dudley S. Reynolds, of Louisville, Ky. Dr. Leartus Connor moved that all gentlemen interested in the subject of ophthalmology then present in the room be invited to participate in the discussion of the papers. Carried.

The second paper, entitled "Some Peculiar Cases of Astigmatism," was by Dr. W. Cheatham, of Louisville, Ky. The author of this paper was absent.

The third paper, entitled "What May be Considered Normal Corneal Astigmatism, With Results from Keratometric Examination of One Hundred Emmetropic and One Hundred Ametropic Pairs of Eyes," was read by Dr H. V. Wurdemann, of Milwaukee Wis. The paper was discussed by Drs. H. D. Noyes, S. D. Risley, G. C. Savage, Eugene Smith and A. A. Hubbell, and the discussion closed by the author.

The fourth paper, entitled "A Study of the Eyes of Three Hundred and Fifty-seven Boys in the Penn Charter School, of Philadelphia, with Notes on the Examination of School Children," was read by Dr. B. Alex. Randall. It was discussed by Drs. Risley and Dowling and the discussion closed by the author.

The fifth paper, entitled "Latent Hyperopia," was read by Dr. Edward Jackson, of Philadelphia, Pa. It was discussed by Drs. C. H. Thomas, H. V. Würdemann, J. A. Lydston, F. C. Hotz and B. Alex. Randall, and the discussion closed by the author of the paper.

The sixth paper, entitled "The Fourth Degree Prism in the Correction of Hyperphoria," was read by Dr. A. E. Prince, of Springfield, Ill., and was discussed by Drs. Gradle and Risley, the discussion being closed by the author.

The seventh paper, entitled "On the Relation of the Motor Muscles of the Eyes to Certain Facial Expressions," was read by Dr. George T. Stevens, of New York. Three other papers appeared on the list, the authors of which were absent.

The Chairman then announced the Nominating Committee, as follows: Dr. F. C. Hotz, Dr. J. J. Chisolm, and Dr. Leartus Connor.

Dr. S. C. Ayres made a statement from the Executive Committee concerning the registration fee of one dollar, and to what this amount of payment would entitle each member, stating that he would introduce a resolution covering the ground. Dr. Ayres's remarks were discussed by Dr. Eugene Smith. On motion the meeting adjourned.

WEDNESDAY, JUNE 8.—MORNING SESSION.

Dr. J. L. Thompson in the chair. Meeting called to order at 9 A.M. The minutes of the previous meeting were read and adopted.

The first paper, entitled "Immature Cataract and the Best Method for Hastening Maturity," was read by Dr. J. A. White of Richmond, Va. The paper was discussed by Drs. Chisolm, Minney, Hotz, Tilley, Baker, Prince and Frothingham, and the discussion closed by the author.

It was then moved and carried that the discussion of the papers concerning cataract be postponed until all of them had been read.

The second paper, entitled "Treatment of Incipient Cataract," was read by Dr. A. J. Erwin, of Mansfield, Ohio.

The third paper, entitled "Method and Results of Simple Extraction," was read by Dr. H. Knapp, of New York. These papers were discussed by Drs. Chisolm, Fox, Frothingham, Noyes, Smith, Scott, Minney, Randall and Risley, and the discussion was closed by Drs. Erwin and Knapp. On motion the meeting adjourned.

WEDNESDAY, JUNE 8.—AFTERNOON SESSION.

Dr. J. L. Thompson in the chair. Meeting called to order at 3 P.M.

The first paper, entitled "New Operation for Trichiasis and Distichiasis—Galvano-Cautery," was read by Dr. Eugene Smith, of Detroit, Mich. The author of the paper also exhibited a patient on whom this operation had been performed. The paper was discussed by Drs. Hotz and Savage, and the discussion closed by the author.

According to the by-laws, the Committee on Nominations, consisting of Drs. F. C. Hotz, J. J. Chisolm and Leartus Connor, reported the following officers for the ensuing year: Dr. S. D. Risley, of Philadelphia, Chairman. Dr. Henry Gradle, of Chicago, Ill., Secretary. On motion the Secretary was directed to cast the ballot of the Society for these nominations. He accordingly carried out the instruction of the Society in this request. Drs. Risley and Gradle then accepted the offices to which they had been nominated in brief speeches.

Dr. S. C. Ayres on behalf of the Executive Committee then presented the following resolution which was adopted:

"The Executive Committee recommend that a registration fee of one dollar be assessed each year on every active member. In consideration of this fee, the member will receive one bound copy of the Transactions for the current year."

The second paper entitled "The Pathology and Treatment of Infantile Cataract," was read by Dr. A. R. Baker, of Cleveland, Ohio. The paper was discussed by Dr. Randall, and the discussion closed by the author.

The third paper, entitled "A Case of Congenital Ectopia Lentis," was read by Dr. George Friebis, of Philadelphia. The paper was discussed by Drs. Bryant, Randall, Morrow and Smith, and the discussion closed by the author.

The fourth paper, entitled "Injuries to the Lens with Cases," was read by Dr. B. L. Millikin, of Cleveland, Ohio. The paper was discussed by Drs. Ayres, Jackson, Aschman, Smith and Lippincott, and the discussion closed by the author.

The Secretary then announced that Dr. Charles A. Oliver, of Philadelphia, was unavoidably detained, but had sent an abstract of his paper. On motion the Secretary was directed to read the abstract, the title of the paper being "Clinical History of a Case of Successful Extraction of a Piece of Steel from an Iris and Lens by an Iridectomy, With Subsequent Absorption of the Lens Substance and Recovery of Normal Vision." It was moved that the paper be transmitted to the Executive Committee with power to act on its admission to the Transactions. The Secretary then announced that Dr. T. E. Murrell, of Little Rock, Ark., was unavoidably absent, but had sent his paper and an abstract of it. It was moved and adopted that the abstract be read. The Secretary then read an abstract of a paper, entitled "Eye Injuries Considered in Relation to Sympathetic Affections," by Dr. T. E. Murrell, of Little Rock, Ark. It was moved and adopted that the paper be referred to the Executive Committee with power to act. These motions were made after Dr. Hotz had pointed out the necessity of not admitting to the Transactions any paper unless the author were present himself, or had at least sent with his paper a full abstract of the same which should be read to the Society. Similar remarks were made by Drs. Ayres and Smith.

The fifth paper, entitled "The Advantages of Optico-Ciliary Neurotomy Over Enucleation," was read by Dr. J. J. Chisolm, of Baltimore, Md. It was discussed by Drs. Smith, Risley, Hotz and Ayres, and the discussion closed by the author.

The sixth paper, entitled "Surgical Treatment of Trachoma," was read by Dr. J. E. Weeks, of New York. The paper was discussed by Drs. Würdemann, Hotz and Knapp, and the discussion closed by the author. On motion the meeting adjourned.

THURSDAY, JUNE 9.—MORNING SESSION.

Dr. J. L. Thompson in the chair. Meeting called to order at 9 A.M. The minutes of the previous meeting were read and approved.

The first paper, entitled "Thiersch's Skin Grafts in Ophthalmic Surgery," was read by Dr. F. C. Hotz, of Chicago, Ill. Dr. Hotz first stated that he desired to change the title of his paper to "Thiersch's Skin Grafts in the Treatment of Pterygium." The paper was discussed by Drs. Prince, Savage, Starkey, Baker, Minney and Noyes, and the discussion closed by the author. Dr. S. C. Ayres moved that papers sent in by title, but not represented by their authors or by abstracts, should be excluded from the Transactions. Carried.

The Secretary announced that Dr. C. J. Lundy, whose name appeared in the list of the first afternoon session, had died; that his paper was, however, prepared and at the disposal of the Society, the paper being in the possession of the deceased member's family. Dr. G. C. Savage moved that a committee be appointed by the Chair who should draw up a resolution expressive of the Society's sorrow at the death of its fellow member. The Chair appointed on this committee Drs. G. C. Savage and Leartus Connor. The Committee has forwarded the following minute:

WHEREAS, The Ophthalmological Section of the American Medical Association, at its meeting in Detroit, June, 1892, learns of the death of one of its members, Dr. J. C. Lundy, therefore be it

Resolved, That as a Section we mourn the loss of an indefatigable worker in ophthalmology, and of an esteemed contributor to the prosperity of the Section.

Resolved, That we deplore his loss to his family, the medical profession, and his large circle of friends.

Resolved, That we tender to the family of our deceased brother our heartfelt sympathy.

Resolved, That a copy of these resolutions be sent to the family of the deceased.

G. C. SAVAGE, Nashville, Tenn.
LEARTUS CONNOR, Detroit, Mich.
Committee.

The second paper, entitled "Osteoma of the Orbit; Removal With Preservation of the Visual Functions," was read by Dr. Edward Jackson, of Philadelphia. The third paper, entitled "Orbital and Ocular Growths with the Report of Three Cases," was announced as conjointly the work of Drs. J. A. White, of Richmond, Va., and William M. Gray, of Washington, D. C., and was read by Dr. J. A. White. The fourth paper, entitled "A Case of Rare Form or Orbital Tumor," was read by Dr. George E. Frothingham, of Detroit, Mich. It was moved and carried that all of the papers referring to orbital disease should be discussed together. The papers were discussed by Drs. Knapp, Reeves, Chisolm, Ayers and Johnson. The discussion was closed by Drs. Frothingham and White.

The Secretary announced that Dr. J. G. Carpenter, of Stanford, Ky., who was listed for a paper entitled "Tumor of the Cornea," was absent, but had sent his paper and an abstract of it. It was moved and carried that Dr. Carpenter's paper be referred to the Executive Committee with power to act.

The fifth paper, entitled "Treatment of Keratoconus by Means of the Galvano-Cautery and Iridectomy," was read by Dr. Robert D. Gibson, of Youngstown, Ohio. The paper was discussed by Drs. Noyes, Knapp, Jackson, Chisolm and Savage, and the discussion was closed by its author. On motion the meeting adjourned.

THURSDAY, JUNE 9.—AFTERNOON SESSION.

Dr. J. L. Thompson in the Chair. Meeting called to order at 2:30 P.M.

The first paper, entitled "The Etiological Relation of Nasal Anomalies to Diseases of the Eye," was read by Dr. H. Gradle, of Chicago, Ill. It was moved and carried that all papers relating to nasal and lachrymal disease be discussed at the same time. The second paper, entitled "An Operation for Stricture of the Lachrymal Duct," was read by Dr. Charles Hermon Thomas, Philadelphia.

At this point Dr. J. L. Thompson, the Chairman, announced that owing to a notification of serious illness in the family, he would be obliged to ask to be excused from further attendance. Dr. G. C. Savage moved that a vote of consolation be extended to Dr. J. L. Thompson, and also a vote of thanks for his efficient services as Chairman of the Section. This resolution was unanimously adopted. On motion, Dr. S. D. Risley, of Philadelphia, was requested to take the chair.

The third paper, entitled "Heterophoria as a Cause of Rhinitis and Tinnitus Aurium," was read by Dr. Leartus Connor, of Detroit, Mich. On motion the meeting adjourned, to meet at 9 o'clock on the following morning.

FRIDAY, JUNE 10.—MORNING SESSION.

Dr. S. D. Risley in the chair. Meeting called to order at 9 A.M.

Dr. C. H. Thomas rose to inquire whether it was in order for a member of the American Medical Association to be registered in two Sections at one time. In reply Dr. Johnson stated such procedure was perfectly proper.

The minutes of the previous meeting, after two corrections were, adopted.

The first paper, entitled "Conservatism in the Treatment of Diseases of the Lachrymal Passages," was read by Dr. S. D. Risley, of Philadelphia, Dr. Edward Jackson occupying the chair in the mean time.

The second paper, entitled "Treatment of Epiphora," was withdrawn by its author, Dr. H. M. Starkey, of Chicago, Ill., who asked to be excused from presenting it owing to his inability to fully prepare his manuscript on account of ill health. It was moved that his excuse be accepted. Carried.

The third paper, entitled "Closure of the Lachrymal Puncta in Dacryocystitis as a Barrier Against Infection of the Wounded Eyeball," was read by Dr. G. A. Aschman, of Wheeling, West Va.

It was moved that Dr. Gould's paper, inasmuch as it pertained to the subject under discussion, be read in connection with the papers on lachrymal disease; hence the fourth paper, entitled "A Method of Infection, Treatment and Prophylaxis of Purulent Conjunctivitis," was read by Dr. G. M. Gould, of Philadelphia.

This series of papers was discussed by Drs. Gradle, Starkey, Gould, Tilley, de Schweinitz and Connor, and the discussion was closed by Drs. Thomas, Risley, Aschman and Gould.

It was announced that Drs. Thomas H. Fenton and H. Earnest Goodman, of Philadelphia, were unavoidably absent and could not present the papers for which they were listed.

The fifth paper, entitled "Insufficiences of the Oblique Muscles and How to Treat Them," was read by Dr. G. C. Savage, of Nashville, Tenn., he having substituted this paper in place of the one for which he was listed by consent. The paper was discussed by Drs. Gradle, Thomas and Connor and the discussion closed by the author.

The sixth paper, entitled "Monocular Diplopia," was read by Dr. R. Tilley, of Chicago, Ill.

The Secretary announced that Dr. Oliver Moore, of New York, was absent, but had sent his paper and an abstract of it. It was moved that the paper be referred to the Executive Committee with power to act.

On motion of Dr. Jackson it was resolved to complete the work of the Section during the morning session, and to dispense with the afternoon work. Accordingly the first paper was called, and the Secretary announced that its author, Dr. Fulton, was absent.

The seventh paper, entitled "Embolism of the Central Artery and Thrombosis, with the Report of an interesting Case," was read by Dr. S. C. Ayres, of Cincinnati, Ohio. The eighth paper, entitled "Embolism of the Central Artery of the Retina, with the Report of Three Cases," was read by Dr. G. E. deSchweinitz, of Philadelphia. These papers were discussed by Drs. Jackson and Ayres.

The ninth paper, entitled "Report of a Case of Zonular Atrophy of the Choroid," was read by Dr. Tilley, of Chicago, Ill.

The Secretary announced that the authors of the remaining papers on the list were absent, and that no abstracts had been sent.

It was then announced that Dr. J. L. Thompson had sent a letter containing his thanks for the expressions of sympathy which he had received from the Section.

It was moved that a vote of thanks be extended to the retiring Chairman and Secretary. This motion was unanimously adopted. On motion the meeting was adjourned.

The Executive Committee of the Section of Ophthalmology for the ensuing year, according to the resolution adopted at the meeting in Washington, will consist of Dr. S. C. Ayres, 64 West 7th St., Cincinnati, Ohio, Dr. F. C. Hotz, 36 Washington St., Chicago, and Dr. J. L. Thompson, 20 West Ohio St., Indianapolis. Ind., Dr. Thompson taking the place of Dr. Edward Jackson, whose term expires.

DR. J. L. THOMPSON, *Chairman.*
DR. G. E. DE SCHWEINITZ, *Secretary.*

HOW SHALL WE MAKE THE MEETINGS OF OUR SECTION MORE ATTRACTIVE AND HELPFUL?

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY J. L. THOMPSON, M.D.,
PRESIDENT OF THE SECTION, OF INDIANAPOLIS, IND.

In view of the many subjects of interest contained in our present programme, it would seem that a departure from our former custom is needed.

I shall therefore, instead of reading an address on the "Progress of Ophthalmology" (a subject with which you are all familar) simply mention to you what I believe to be the most attractive feature of our sessions, namely: the discussion which follows the reading of papers. Dispense with this, or devote too short a time to it and our meetings are unprofitable. Cultivate and foster it, then the converse obtains.

Of course,it is highly essential, that we have a sufficient number of ably written papers for our consideration, but if too many are read, the object of our meeting together is defeated and we go hence almost as barren of results as if we had remained away. It is on this rock that the chairman and secretary are liable to founder; because in their efforts to provide material, they usually have to invite many to contribute; could they know before hand just who would respond favorably, but few mistakes could happen, but dealing with unknown numbers they are just as likely to have too many as too few, when disaster follows.

Would it not be wise to give the matter over to the executive committee, whose duty it should be to decide as to the papers which should be read before the Section, and those by title only?

Subjects are often presented which have cost their authors months of painstaking research and yet, though they be the most ably prepared, if no discussion follows, they might as well have been placed in some medical journal and sent to us for perusal in our homes, at our leisure. But if on the contrary a full and free discussion follows, we go away amply repaid for any sacrifice we have made; we are refreshed and greatly benefited by this comparing of ideas and experiences, lifted as it were out of the ruts of routine work to the higher plane of progressive Ophthalmology.

So in the place of an address by your chairman we will immediately proceed to the work which is before the Section.

GRADATION OF LENSES.

Read in the Section of Ophthalmology at the Forty-third Annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY DUDLEY S. REYNOLDS, A.M., M.D.,
PROFESSOR OF OPHTHALMOLOGY, OTOLOGY AND MEDICAL JURISPRUDENCE IN THE HOSPITAL COLLEGE OF MEDICINE, MEDICAL DEPARTMENT OF THE CENTRAL UNIVERSITY OF KENTUCKY; SURGEON TO THE EYE AND EAR DEPARTMENT OF THE LOUISVILLE CITY HOSPITAL.

The gradation of lenses has been a perpetual source of discontent amongst all those who seek scientific accuracy, and the want of a uniform system is universally recognized. I had the honor, at the Ninth International Medical Congress, to read a brief paper on the necessity for reform in the manner of designating lenses, and in conclusion, I suggested the propriety of designating them according to the angle of refraction, as for example: begin with a lens the refracting powers of which equal an angle of 15′; the next in the series 30′; 1°; 1° 30′; 2°; 2° 30′ etc., up to the maximum angle of deviation of the pencil of refracted light. At the Cincinnati meeting of the American Medical Association, in May 1888, I presented the subject in a brief review of the principles, upon which lenses are constructed, and presented a table embracing a series of forty-two lenses, graded in minutes and degrees, according to the angle of refraction as determined by the angle of deviation the lens produced in a point of light transmitted through a frosted disk. The value of a lens must of course depend upon its angle of refraction, whether it be a prism, cylinder,sphere or a combination. If we adopt the method of gradation by the angle of refraction, we shall have no more such confusion, as the student must encounter in his attempts to *determine the relative* value of the metrical, the so-called inch system, or those *denominated in fractions of the radius* of the quadrant.

Professor *Loring says, in discussing the subject*: "The metre is taken as the unit, and each metre is *called a dioptric. As the French metre is equal to* thirty-seven inches, 1 D. = $\frac{1}{37}$ expressed in the old style." Dr. Claibourne of New York, suggests that, "the dioptre is equivalent to $\frac{1}{36}$ or $\frac{1}{40}$ according as the French or English inch is *taken* as *the* standard." Professor Landolt says: "One dioptre is to be *taken* as 37 *Paris* inches, or 39-5 English inches."

In England, distances are measured,as in the United States, by lines,inches,feet and yards, linear measure. In France, and some other countries, which have adopted the French system of millimeters, centimeters and meters, the metrical system of grading lenses harmonizes with this method of linear measurement, but it does not harmonize with either the English or American methods of linear measurement. To show how far this confusion extends, I invite your attention to the following, from Professor Noyes recent text book on diseases of the eye (p. 91): "I have noted with the same optical error uncorrected, say 1 D. or 2 D., differences of vision varying between $\frac{20}{40}$ and $\frac{20}{100}$". All through the literature of this subject, are found just such confusing statements. Now, the state of vision, according to Professor Snellen's method,is determined by ascertaining the capacity of the eye to perceive objects under a definite angle, illuminated by parallel light. Assuming that the range of accommodation does not extend quite so far as twenty feet, this is taken as the proper distance, beyond the range of accommodation, where objects may be placed for the determination of the refraction of the eye, and the relative acuity of vision with parallel light. Twenty, therefore, meaning English feet, is the numerator, and the size of the test object for determining the angle of vision, the denominator of the fraction used to express the state of vision, uninfluenced by the accommodation.

The fractional system of dividing the quadrant of the crown glass sphere has become part of the classical literature of mathematical science. It was used for designating lenses for spectacles, beginning with Friar Bacon, about 1282, descending in unbroken lines, until 1867, when the International Ophthalmological Congress, held at Paris, appointed a committee to investigate and report in favor of a uniform system of designating lenses. The Committee reported in favor of the metrical scale of focal lengths, having an interval equal to a lense of two hundred and forty centimeters focus. Since that time, Pœtz and Flohr of Berlin, with their lenses graded in Prussian inches of focal lengths, and Nachet and Son, with their series, graded in Paris inches, have no longer just grounds of dispute with English opticians, for they too, have adopted the metrical scale of grading lenses, still measuring distances by the old English standard, and recording results by the hap-hazard methods of unreasoning custom.

Dr. Edward Jackson of Philadelphia, deserves the thanks of the scientific world for his successful work in advocacy of the adoption of the angle of deviation of refracted light as a test of the value of prisms. Following this line precisely in the footsteps of Dr. Jackson, we shall be forced to adopt the angle of refraction as the test of value of all lenses, and we should designate them accordingly, in minutes, and degrees, thus harmonizing the practical application of the science of optics with those principles employed in the determination of the optical properties of the human eye, with the same mathematical principles elucidated by the great Astronomers and *Mathematicians of the* world.

Now suppose we reverse the order of calculating the radius of curvature by dividing the quadrant of the sphere, and substitute the point of positive infinity as the beginning of our scale of *gradation* of refracting lenses?

To begin this way, we avoid the inharmonious arrangement of taking a medium refracting power, one meter in focal length, as the unit, and we likewise avoid the difficulty of securing a uniform medium as an index of refraction for the construction of our test lenses, and those we prescribe for our patients.

It is a fact, that we do require of the *optician*, a lens having equal angular refraction with our test lens, and we do not require a specified medium out of which to construct the lens prescribed for the patient; it follows, therefore, that we reject the lens measured by focal length merely, as determined by any fixed standard of radius in the grinding tools, and require the crucial test of refracting power. Then, let us so determine our scale as to begin with parallel light, and denominate the refracting media according to their power to deviate that light in angular terms of minutes and degrees. The greatest confusion results from the common habit of writers and practitioners using the denominator of the fraction of the radius as synonymous with so many inches of focal length. It is just as common to observe practitioners using some of the cheap imitations of Snellen's test types, not one of which have either corresponding size or form of the original. I have measured the letters in a large number of so-called reprints and found none of them even approximately like Snellen's. Tests of acuity of perception and angle of refraction in the eye must always correspond, but this can never be possible without correctly graded test lenses, correctly graded test objects, and apportionment of distance in terms harmonious with the mensuration employed in grading the angular distances of test objects, and refraction of the test lenses. Neglect of these essentials impairs the value of nearly all the published statistical tables of clinical observations on all the varying forms of ametropia.

WHAT MAY BE CONSIDERED NORMAL CORNEAL ASTIGMATISM? FROM KERATOMETRIC MEASUREMENTS OF THREE HUNDRED EYES.

Read in the Section of Ophthalmology at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY H. V. WÜRDEMANN, M.D.,
OF MILWAUKEE, WIS.

Keratometry is now considered an essential to the examination of the ocular refraction. As the principal seat of astigmatism is in the cornea there can be no doubt but that the measurement of its curvature is both time and labor saving; and in the near future this fact will be appreciated by every reputable ophthalmist. Correction of refractive errors is the most scientific portion of an oculist's work and cannot be done properly without several means of objective examination.

The ophthalmometer of Javal and Schiötz is conceded to be the most practical instrument for the estimation of the corneal curvature. In the accompanying instructions,[17] in treatises and text books, the corneal is taken as equal to the whole astigmatic error. In 1882 Javal reported[11] that in the measurement of 100 eyes in 96 per cent. the corneal corresponded exactly with the total astigmatism. His associate Nordensen[16] followed later with a report of several hundred more, giving the same average. Since that time this statement has been accepted by most writers.

In 1889 Swan Burnett said[3] that his experience with Javal's ophthalmometer tended to substantiate this although his percentage of difference between the total and the corneal astigmatism was greater. *A few months ago the same author wrote*[4]: "It is a fact that we seldom find a cornea without a measurable degree of astigmatism." Normal corneal astigmatism he would place at .25 or .50 D. according to the rule. G. Lindsay Johnson says[13] *that the majority* of persons possess a corneal astigmatism of less than .75 D. Bull finds[2] an astigmatism of from .25 to .75 D. with the rule in 80 per cent. of his cases. Doubtless *many others** *have* noticed the disparity between the corneal and total *measurements but* have not published their observations. However this may be it seems marvelous that the statement of Javal has *gone so long unchallenged*.

The usual directions for keratometry with the ophthalmometer are: After finding the direction of the principal meridians to carry the movable plaque toward the stationary *until the images* touch and to judge of the degree of the astigmatism, after turning to the meridian of less refraction, by the number of overlapping steps.[17]-[3] This method is open to the objection of *inaccuracy in that* the *personal* equation of each observer admits of an error which may amount to .50 or 1.00 D. It will do very well for rough work but closer results may be obtained, by first approximating the plaques and finding the direction of the astigmatism, then moving the stepped plaque until the images of the first two *black interspaces* are equal. It is objected by Weiland[21] that the refracting quartz prism of the telescope is not achromatic, so that the edges of the images are not sharply defined, making it impossible to get accurate contact. One can more accurately estimate the size of two black objects than judge when two white surfaces exactly touch. Of two equal squares, the one white on a black back-ground, the other black on a white back-ground, when contrasted the former appear larger. The edges of white objects when approximated appear to merge into each other before they actually touch. The refractive values should be read off on the arc, and the differences of the principal meridians noted, as was suggested by the inventors.[12] For accurate determination of the central astigmatism it is essential for the visual line of the subject to exactly coincide with the optical axis of the instrument. I usually request the patient to steadily observe the reflected image of his own eye in the center of the objective. Such varying reports on the relation of the keratometric to the other measurements as given by Chibret,[6] Bull,[2] Burnett,[4] Story,[18] Ostwalt[18] and others may be accounted for by the personal equation of each operator and by the manner in which the examinations were conducted.

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* After this article was written I came across the following by a writer in an English ophthalmic journal. He published the astigmatism found by the ophthalmometer in 139 eyes, and in a parallel column the cylindrical lenses *finally agreed* upon as the proper ones, after comparison of results obtained from the ophthalmometer, test lenses, ophthalmoscope and retinoscope. In 62 eyes he claims that the ophthalmometer indicated exactly the true amount of astigmatism. In 14 the discrepancy was but .25 D., and in 26 it was a whole *diopter* or over, the
D. He says that in many cases in which the
ylinders were not prescribed. John B. Story,
vol. x, No. 117.

Astigmatism is present at each *point* on the corneal surface where the refraction of the meridians is unequal. Thus we may not correctly speak of "astigmatic zones" as is doneby Sulzer.[19] As a rule we recognize, for practical purposes, only the central astigmatism. This is located at the intersection of the visual axis (which may be considered the same as the line of fixation), and the cornea. (See Fig. 1.) Five degrees on either side of the fixation point usually serve for all purposes of the visual act. If this area be free from aberration we say that the eye is non-astigmatic.

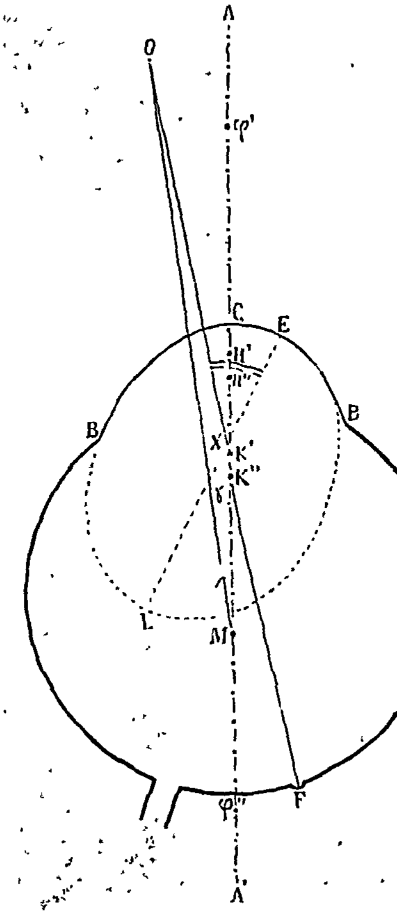

FIG. 1.—Angles alpha and gamma. (Landolt.)[14] A A, optic axis; O F, visual line; *O M, line of fixation*; E L, *major axis of corneal ellipse.* The line of fixation does not correspond with the optic axis, but forms the angle O M A, angle gamma, nearly equal to the angle O X A, formed by visual line with optic axis. O X A may be considered as the angle gamma. The visual line does not pass through the summit of the corneal curve E, but forms with the axis of the cornea E L, the angle O X E, the angle alpha.

All corneæ are highly astigmatic in the periphery, and unless the visual axis bears an unusual relation to the axis of the cornea, their centers are moderately astigmatic. In most cases the curvature of the vertical diminishes more rapidly than that in the horizontal meridian. Thus in certain subjects we find central astigmatism with the rule, and at five or more degrees away from the visual axis it is against the rule. Fig. 2 represents the corneal measurements of an eye in which all other forms of examination failed to show the slightest ametropia.

The refractive values were obtained by causing the subject to look intently during the examination at points 5° removed from each other on the ophthalmometric disc along each meridian until the limits of the cornea were reached. (With a refraction of 40.00 D. this arc equals 0.7369 mm.) It will be seen that I have divided the surface of the cornea into zones, as was suggested by Aubert,[1] but with a modification of his plan. At 10° to 15° about the *corneal* axis (not the visual centre as Aubert puts it), the curvature rapidly flattens, dividing the surface into two true zones, the polar and peripheral. From measurements of a number of subjects I find the former ellipsoidal, its long diameter approximating the general astigmatic axis. The optical portion of the cornea does not accord with the polar zone. It is limited by the angular aperture of the pupil, which even when very wide may be considered to extend about 17° on either side of the center. In this case the center of the pupil corresponds approximately to the optic axis. The shape of the optical zone depends upon the form of the pupil, being usually ellipsoidal, with the long axis within 20° of the vertical. The peripheral portion of the cornea is bounded by the limbus, and may be called the scleral zone.[1] The visual center is usually found in the nasal quadrant of the optical zone, its position depending upon its relation to the optic axis. This is determined by a decentration of the crystalline.[19] In the examination of twenty-two eyes Sulzer found considerable variance of the pupillary center to the axis of vision. (See Fig. 3.) The amount and kind of astigmatism is influenced by the relative position of the visual axis to the different quadrants of the polar zone. For instance, if in Fig. 2 the visual line had passed 5° more to the nasal and lower portions of the optical zone, there would have been no central corneal astigmatism; if 10° higher, it would have been against the rule. In high myopia the angle gamma may be negative, the visual axis will then pass through the cornea to the temporal side of the axis of rotation. The two may coincide in lower degrees of myopia, or in hyperopia the visual line may be even more to the nasal side.[7] In this subject the angle gamma was positive, the optic axis being about 4° outward and 1° downward from the visual center.

The amounts of the normal lenticular, and proportionately that of the normal corneal astigmatism, appear to be greatly influenced by the size of the angles gamma and alpha. This factor is also an important element in modification of astigmatism from other causes. At a future time I hope to report more fully on this subject. In the diagram (Fig. 2) there is shown a central astigmatism of .50 D. in the vertical meridian. We see that the astigmatism remains with the rule within an area of 5° around the visual center. At the lower and inner portions of the optical zone the cornea is non-astigmatic, as is shown by the shaded area on the chart.

On account of the more rapidly diminishing curvature in the vertical meridian, in the scleral or peripheral zone the astigmatism becomes *against the rule*, until at the superior margin of the cornea it amounts to 3.00 D., and at the lower border is 5.00 D. against the rule. On the contrary, in the horizontal diameter the astigmatism gradually increases *with the rule*, being at the nasal limbus 7.00 D. and at the temporal 9.50 D. with the rule. Outside of the optical zone the axes of the principal meridians deviate from 90° and 180°; these axes in places are not at right angles to each other. This is due to the irregular curvature of the scleral zone. In the horizontal and oblique meridians we find less variation. Within the optical area of corneæ with oblique central astigmatism we may find the axes to vary in a surprising manner.

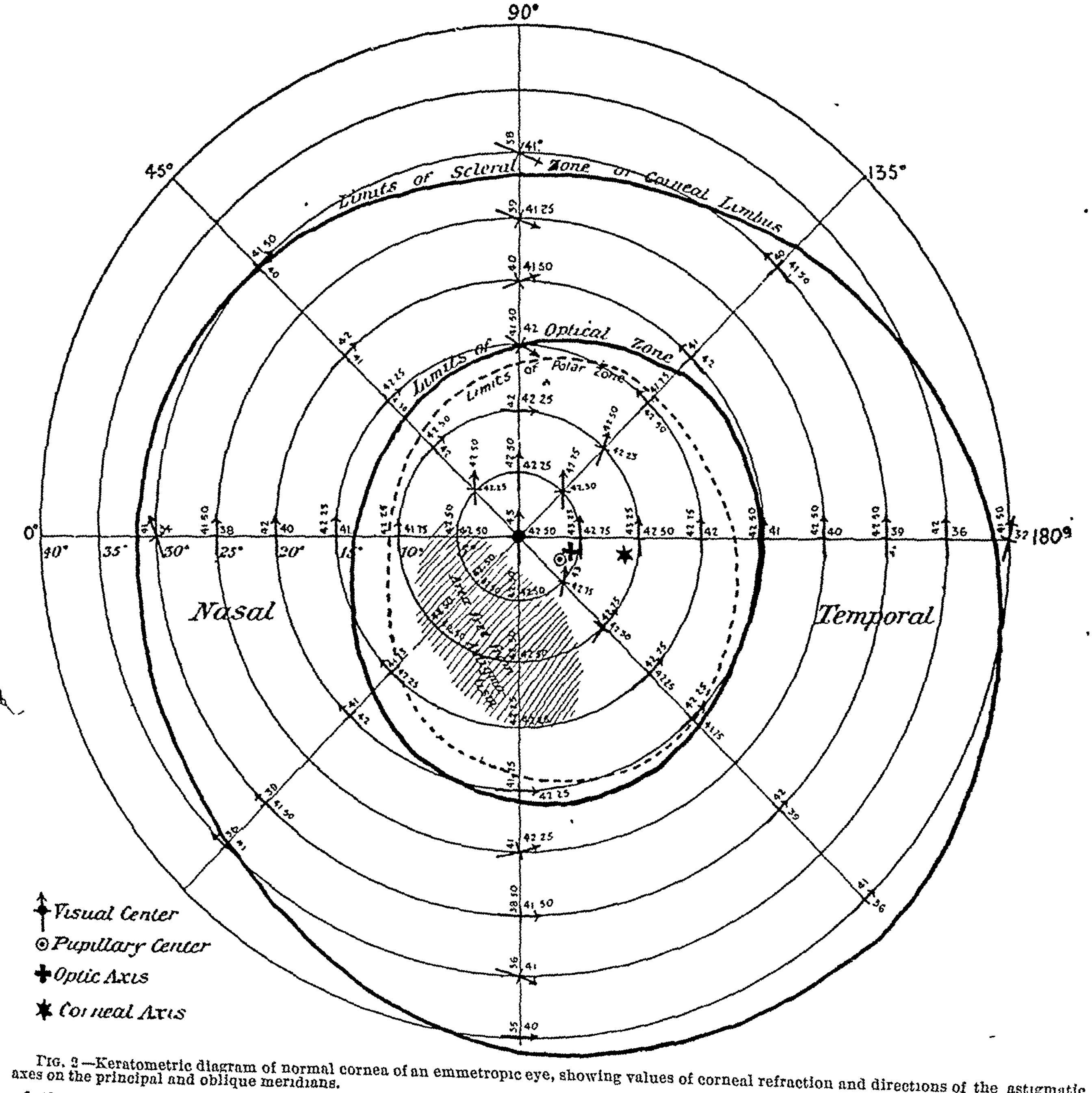

Fig. 3.—Keratometric diagram of normal cornea of an emmetropic eye, showing values of corneal refraction and directions of the astigmatic axes on the principal and oblique meridians.

In Fig. 4 there is shown the optical zone of a cornea with central astigmatism of 3.25 D. at 30°. Five degrees down on the vertical meridian there is 3.25 D. at 75°, and the same distance up, 1.00 D. at 135°. Outwards it is 4.50 D. at 60°, and inwards 3.50 D. at 75°. All of these measurements are within the area used for distinct vision. At 10° in all directions from the center of vision the astigmatic axes tend toward the direction of the meridian upon which measured, at 15° away almost coinciding. It is seen that this corresponds to the emmetropic eye in that the curvature diminishes more rapidly in the vertical than in the horizontal diameter, making the peripheral astigmatism *against* in the vertical and *with* in the horizontal meridians. These changes in the directions of the principal meridians (denominated "meridional astigmatism" by Jackson),[9] show the physical impossibility of bringing up the visual acuity to the normal in most cases of oblique astigmatism. In this subject the optic axis was found to be 2° obliquely downward and outward of the visual center, and the corneal axis 5° diagonally downward in the opposite quadrant.

Degrees of corneal astigmatism of three or four diopters may be produced by the visual line passing eccentrically through the cornea, and I am convinced that this is one of the principal factors in its production. It is true that many corneæ are congenitally deformed, and that others become so through the effects of inflammation or ulceration. The defect may also be due to the mechanical effect of the recti muscles or some extraneous cause. I have seen 5.00 D. against the rule appear *after a cataract* extraction and 2.00 D. after an advancement of the recti muscles, and the same has been noticed by others.[5] The amount of monochromatic aberration in the horizontal meridian of the cornea has been worked out[8] by Prof. Harkness to amount to about 1.00 D. in a pupil of 4 mm. In his report he said that the data he could procure for the vertical meridian was too meager to allow of a satisfactory result. I doubt not but that this would be found greater in the vertical meridian, for my measurements tend to show that the vertical is less regular than the other meridians. These changes must be considered a portion of the irregular astigmatism of the eye.

Between the dates of February 1 and May 20 of this year, my associate, Dr. J. S. Barnes, and myself have been preserving the corneal measurements taken by the ophthalmometer of Javal, in selected cases, with the view of establishing reliable data upon which an estimate of the difference between the total and the corneal astigmatism could be made. During this period we have recorded in all 300 eyes, of which there were 63 emmetropic, 52 simple hyperopic, 8 simple myopic, and 177 eyes with total astigmatism for which glasses were prescribed. Of the latter there were 119 with the rule, 27 against, and 31 with the axis oblique—making 177 astigmatic and 123 non-astigmatic eyes. These were examined by the ophthalmoscope, skiascope, ophthalmometer and the subjective tests (90 per cent. of the ametropic eyes being examined under homatropin or atropin), for the detection of visual error. Of the whole number, in 279 (93 per cent.) the corneal differed materially from the total astigmatism, being equal in only 7 per cent. All of the emmetropic eyes showed a difference, from a little less than .25 to .75 D. Of the simple hyperopic but 4 per cent. had the same; of the myopic all were equal; and in the eyes with total astigmatism 19 (10.75 per cent.) had the corneal equal to the total error, while in 158 cases (89.25 per cent.) there was a difference. In two cases the disparity between the corneal and total measurements was sufficient to change an error shown by the ophthalmometer as *with* the rule to *against* as given by the other tests. All of the emmetropic, myopic and *hyperopic eyes had central corneal astigmatism.* The number of simple myopic cases was too small to formulate any rule, but we may safely say that emmetropic and simple hyperopic eyes are seldom or never free from central corneal astigmatism. Of 177 astigmatic eyes there were 14 without corneal astigmatism, being pure lenticular cases, making my percentage of total astigmatic cases without corneal error to be but 8 per cent.

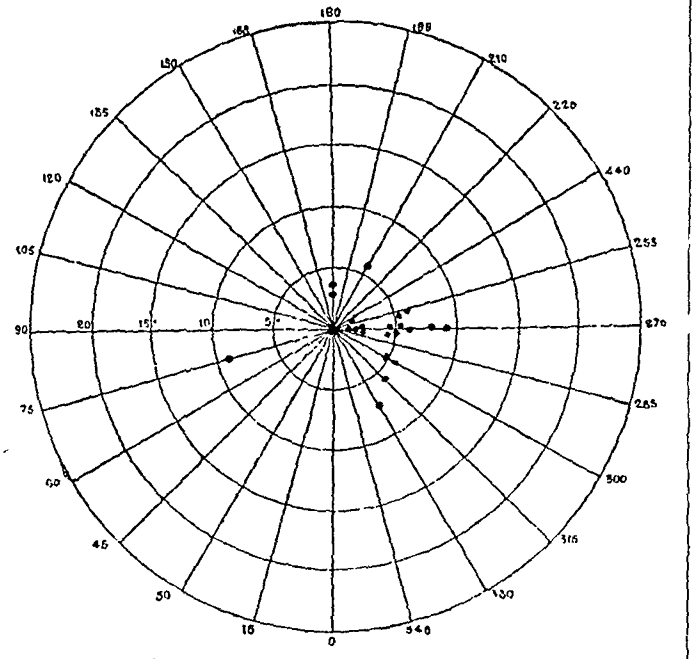

FIG. 3.—The black points indicate the pupillary centers of 22 eyes The visual line passes through the center of the figure. The left side of the diagram corresponds to the nasal side of the eye. (Sulzer.)[19]

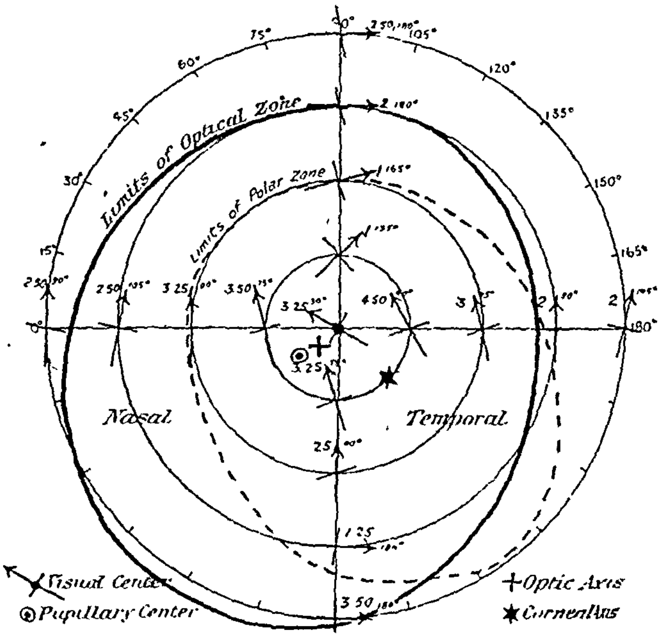

FIG. 4.—Optical portion of a cornea with central astigmatism of 3.25 D. at 75, showing variations in the axis of meridional astigmatism.

The following table shows difference between the amount of astigmatism found by the ophthalmometer and that agreed upon by other methods of examination:

TABLE SHOWING DIFFERENCE BETWEEN CORNEAL AND TOTAL ASTIGMATISM IN THREE HUNDRED EYES.

CORNEAL ASTIGMATISM.

Total Refraction.	Equal.	Greater.					Less.					Totals.
Amounts	0	.25	.50	.75	1.00	over	.25	.50	.75	1.00	over	
Emmetropia	...	20	34	9	..	...	..	..	..	..	...	63
Hyperopia	2	11	26	7	4	2	..	..	..	..	...	52
Myopia	...	3	4	1	..	...	..	..	..	..	...	8
As. with	9	17	50	35	6	2	..	..	..	..	...	119
As. against	4	..	..	..	..	...	7	10	1	1	2	25
Tot. against Cor. with	...	..	2	..	..	...	..	..	..	..	...	2
Ax. 45°–135°	...	3	2	1	..	...	..	..	..	..	...	6
Ax. 15°–165° 75°–105°	3	3	3	2	3	1	..	..	4	..	...	19
Ax. 30°–150° 60°–120°	3	1	1	1	..	...	..	..	..	..	...	6
Totals	21	58	122	56	13	5	7	10	5	1	2	300

In adults there was usually a *surplus* of .50 D. when the astigmatism was *with the rule*, and when *against the rule*, the corneal value was the same amount *less* than the total error. In children the average difference was .75 D., and in old people .25 D. Most of the cases where the corneal tallied with the total astigmatism were found in the elderly; when the meridians are oblique the measurements more nearly agree. This should be accepted as a very general statement, as the astigmatic aberration is modified both by the amount of lenticular decentration and the kind of general ametropia. In myopia the angles alpha and gamma may be smaller or even non-existent, in hyperopia larger; thus in the former the normal corneal and lenticular astigmatism is less, and in the latter larger. There is no doubt in my mind but that this difference is neutralized by a corresponding lenticular astigmatism of the opposite kind. This has been mentioned hypothetically by others, but I have never yet seen a refutation of Javal's statement relative to the identity of the corneal with the total astigmatism. Normal lenticular astigmatism is always *against the rule*. It has a definite relation to the size of the angle gamma, having its origin in the oblique position of the lenticular refracting surfaces to the visual line D. The decrease in difference between the total and corneal errors in old subjects, may perhaps be explained by senile changes in the lens structure increasing its refraction. I do not believe in the production of "spastic" lenticular astigmatism by irregular or partial contraction of the ciliary muscle, although cases have been reported[15] in[10] which the total astigmatism has been increased under full mydriasis. I believe with Sulzer[19] that when the size of the pupil is increased beyond the normal, as by atropin, that the zone outside of 5° from the visual axis participates in the ocular refraction, and in cases where there is a marked difference between the error of this and that of the center, a change may take place in the amount of total astigmatism under mydriatics according to the degree of corneal asymmetry. I allow that "tilting" of the lens[2] exists[15] as a cause of lenticular error, but consider the explanation here given a preferable view of *normal* lenticular astigmatism. The few cases where the axis of the total astigmatism varied from that of the corneal may perhaps be explained by obliquity of the lens, as suggested by Tscherning.[20]

It is generally held[3 7] that much of the irregular central astigmatism of the eye lies in the lens. I would ascribe some of this to the cornea as well. In fully a quarter of my own measurements the directions of the principal meridians but a few degrees removed vary from that of the visual center. Even in the optical zone the principal meridians may not be at right angles to each other. (See Fig. 4.) In consequence of this irregularity it is impossible to fully correct an astigmatism by cylindrical lenses, and such a correction must always be considered an approximation.[19] There is a certain amount of amblyopia due to astigmatism and this is in proportion to the amount of corneal asymmetry.[15]

In such an imperfect and variable an instrument as the human eye, where in one person of sensitive nervous organization a total astigmatism of .125 D., against the rule, gives rise to eye-strain, while in another doing the same amount and kind of work an astigmatism of even 2.00 D. is tolerated with impunity; where shall the line be drawn? What may be considered normal corneal astigmatism? I regard that amount of corneal astigmatism as normal which is neutralized by a corresponding lenticular astigmatism of the opposite kind. This is equal to the difference between the total and the corneal measurements, which may be considered a corrective effort on the part of nature in neutralizing a certain amount of lenticular error. In the use of the ophthalmometer in glass fitting I am prepared as a general rule to deduct .50 to .75 D. from its readings in children and .25 to .50 D. in adults when the meridian of greatest refraction is vertical, and when this is horizontal to add the same amounts in estimating the total astigmatic error. When this meridian is at 45° or 135° the corneal and the total errata will be about the same; when at other angles a greater or less varience is to be expected according to the relative nearness of the principal meridians to the vertical or horizontal. Where no central corneal error exists I expect to find astigmatism against the rule.

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Discussion.

Dr. Henry D. Noyes, of New York:—I am able to say something with reference to the objective determination of astigmatism from seven years' experience with Javal's ophthalmometer. I have looked at not less than five thousand eyes and have made records of what I have seen. I shall simply speak of a few practical points which have been elicited by the very accurate description given by the reader of the paper. The irregularity of the form of the cornea is very well known and it is equally well known that it does not yield itself to any proper mathematical formula. It is also true that only the central portion is available for accurate vision and that has two practical corlolaries. In the first place it means that the vision which we can expect to obtain by the operation of iridectomy must necessarily be imperfect because of the irregularity of the cornea, provided the central portion is excluded. If the central portion remains in use, it does not follow that the irregularity of the curve will have a great depreciating influence upon vision. This is demonstrated by the results of extraction of cataract with or without iridectomy, and it is a fact that equally good results may be found after extraction of cataract with iridectomy as when no iridectomy has been done. A notable instance of this came under my notice not long ago. A man 50 years of age had had extraction performed by a friend and his visual acuity was 20-18. I found on examination of the cornea that there was astigmatism of about 1 D., and when that correction was added to his glasses his vision rose to 20-12. The difference is small but it shows that the central portion of the cornea was by all odds the dominant portion.

The value of the ophthalmometer is higher than is generally supposed. For example, Javal said that it gave the total error within about 1 D., but my experience is that it gives you the lens to within about .50 D. Many times it gives the exact error and the glass required so far as the cylinder is concerned. This has been illustrated to me many times and a case occurring within a week is in point. This individual had worn cylinders for two years but they had been changed at different periods. The ophthalmometer showed in one eye astigmatism of 1.5 D. and in the other 1.25 D. He had never worn cylinders of more than .50 D. He would accept a cylindric correction amounting to what the ophthalmometer gave provided the correction consisted of both a plus and a minus cylinder. He was an example of mixed astigmatism. Mixed astigmatism has been shown to exist in a larger percentage of cases than was formerly supposed.

It is also true that vision, when the astigmatism is found in the oblique meridians is rarely made normal, whether these meridians have a symmetrical relation to the median plane or not.

Another fact that is brought out by the examination with the ophthalmometer is that the principal meridians of the cornea are, in some instances, not at right angles with each other. One may be at 90°, while the other is at 30°. One may be at 80° and the other at a point less than a right angle to the first. The consequence is that you have to adjust the axis of the cylinders according to what the patient will accept, and not according to what the ophthalmometer shows to be the true condition. In other words the determination of what the patient must wear is a practical question and is to be determined by experiment. The value of the ophthalmometer is to show the lines within which the experimentation must proceed. With the knowledge which a little experience gives and with a careful observation of the facts which the ophthalmometer has shown, you will rarely fail to discover any important error.

Another point is that the use of the ophthalmometer has greatly diminished the necessity for a mydriatic. The employment of a mydriatic I am confident should be limited to cases in which the amount of pain and severity of the subjective phenomena make you feel that an anodyne must be applied, and here the atropia is employed rather as an anodyne than for the purpose of enabling you to determine the refractive error.

In my work I rely chiefly, first, upon the ophthalmometer, second, upon direct examination with the ophthalmoscope with the glass determined by the ophthalmometer placed behind the mirror, and then I go to the test box to ascertain what can be done to bring the acuity of vision up to the normal.

These are some of the practical points relating to this subject of astigmatism, and which enable us by proper objective methods to make the subjective examination less trying to the physician and patient than was formerly the case.

Dr. Samuel D. Risley, Philadelphia:—In entering upon a discussion of this important branch of ophthalmology, I should like to emphasize a significant remark made by Dr. Noyes, that after the use of the ophthalmometer the glass which is to be prescribed is the result of testing rather than of the scientific data obtained by the ophthalmometer. This is strictly in accordance with my own experience. The glass to be prescribed is the one selected by the patient as giving the best acuity of vision.

In reference to the use of mydriatics. In my experience, the majority of persons who come with asthenopia, fall in the category mentioned by Dr. Noyes, that is, they have pathological states of the chorvia and retina which call for the use of the mydriatic for its therapeutic effect. Moreover in these cases, a mydriatic is required to get at anything like accuracy in estimating the error of refraction. Without it, different results are obtained on successive days. If the mydriatic is used the results are the same at different examinations, and if the mydriatic is continued, vision, which at first was below normal, because of the accommodative retino-chloridal irritations and turgescence, will come up to the normal standard, as this condition subsides under the enforced rest and sedative influence of the drug.

Dr. G. C. Savage, Nashville, Tenn.:—Astigmatism can be corrected either by lessening the curvature that is too great, by means of a concave cylinder, or increasing the curvature that is too small by means of a convex cylinder. I am on the floor to advocate the claims of the mydriatic. In many cases the patient will take a concave lens in preference to a convex lens, when actually the convex lens is the one that is needed. The ciliary muscle is often unruly and I am not willing to refract a case in a young person where this muscle is allowed to run riot. There is no harm in using a mydriatic. There seems to be a disposition to discard its use and that is what the people want. The mydriatic does no injury, while it enables us to do accurate work. Without a mydriatic I should not be willing to undertake the refraction of the eyes of a young person.

Dr. Eugene Smith, Detroit:—I am one of those who find it unnecessary to use a mydriatic as much as formerly. With the ophthalmometer, the retinoscope and the ophthalmoscope, I have, within the past two or three years, found myself using mydriatics more and more seldom every month.

In regard to the peculiar axis in using the ophthalmometer, I find that sometimes we are careless in letting the patient twist the head from the one side to the other and we do not find the same axis in the two eyes. When I find that the axes are inclined to be parallel or do not agree, I frequently do the work over and find that the mistake was my own and not due to the differences in the two eyes.

I have so far heard nothing particularly said in regard to retinoscopy or skiospy. These are not depended upon as much as they should be. Dr. Noyes says that he uses the ophthalmometer, then the ophthalmoscope and then goes to the test glasses. I go further, I take the ophthalmometer, then the ophthalmoscope and then the retinoscope, but in the large majority of cases I do not find it necessary to use a mydriatic in retinoscopy. Some think that they must use it in every case. With me, its use is decidedly the exception rather than the rule. I also use the direct method with the ophthalmoscope after the method mentioned by Dr. Noyes of fitting the cylinder into the ophthalmoscope. I however, use the optometer of Cooper, of London. I find it superior for retinoscopy.

In regard to what is normal astigmatism, I should consider normal astigmatism to be that degree which produces no trouble, that is where you do not know whether it exists or not. Where a patient comes with astigmatism, no matter what its degree, if there is asthenopia, I regard that astigmatism abnormal. In the majority of cases where it is corrected and there is no abnormal muscular condition, the patient gets well of the asthenopia.

Dr. A. A. Hubbell, Buffalo, N. Y.:—I have used the various objective methods of measuring astigmatism. I have great confidence in retinoscopy, and during the past few years I have also used the ophthalometer and found it a most valuable aid. My experience has taught me, however, that the higher the degree of astigmatism we find with the ophthalmometer the more should we under-correct it, in prescribing cylindrical glasses. In a conversation recently with Javal, he told me that he decreased the strength of the cylinder proportionately, the higher the amount of astigmatism shown by the ophthalmometer. If he found astigmatism amounting to 1 D. to 1.25 D. he would expect to prescribe O. 50 D. to O. 75 D.; if he found 3.00 D. he would prescribe about 2.25 D. and so on. I have noticed recently[1] an article in the Philadelphia *Medical News* by Dr. Willman, in which some mathematical calculations have been made, showing the errors of Javal's ophthalmometer, and these errors nearly correspond with the differences which Javal himself made between the cylinders used, and the astigmatism indicated by his instrument. Javal has tabulated the cylinders that should be prescribed in the various readings of his instrument in his work on ophthalmometry.

Dr. H. V. Würdemann, Milwaukee:—We cannot have too many means of objective examination. In my opinion the ophthalmometer is our most exact instrument in the search for astigmatism except in favorable cases under a mydriatic with the skiascope.

One of the gentlemen spoke of normal astigmatism. My subject was normal *corneal* astigmatism, that is the difference between the total astigmatism and the corneal astigmatism.

In the lower grades of corneal astigmatism in the emmetropic, hyperopic or myopic eye, the ophthalmometer will give too much or too little according as the astigmatism is with or against the rule. In the higher grades, the ophthalmometric measurements are greater than the glasses prescribed. For instance if this is 3.5 D. the ophthalmometer may give much more than that amount. I have ascribed this to my indisposition to fit fully correcting lenses in hypermetropic astigmatism and I generally under-correct. I allow a certain amount for the wishes of the patient, averaging the results of all the tests, but do not place too much stress upon his preference when against the objective tests.

LEG ULCER.—Dr. Weismueller praises the action of a dusting powder thus composed:

℞—Acid salicyl., ℈iv.
Acid borici., ℈ij.
Zinci oxidi, ℥ss.
Amyl,
Talc., āā ʒv. M. ft. pulv.

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[1] Note by the author. Dr. Hubbell probably refers to the article by Carl Weiland, M.D.[21]

A METHOD OF EXAMINING THE EYES OF SCHOOL-CHILDREN.

ASED ON THE STUDY OF THREE HUNDRED AND FIFTY-SIX BOYS IN THE WILLIAM PENN CHARTER SCHOOL.

ad in the Section of Ophthalmology at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY B. ALEX. RANDALL, A.M., M.D.,
OF PHILADELPHIA, PA.

Threadbare as this subject may appear to anyone ho, without special interest in it, has noted the apearance of hundreds of papers on the matter, and as, perhaps, been disgusted at the wide discrepncies of views and results which they too often reeal; it is, nevertheless, one of great importance to s, as citizens and ophthalmologists, and it is likely demand more, rather than less, attention in the ture. All its aspects have claims upon our interest nd study, but many of them belong to the Section n Hygiene and State Medicine rather than to the phthalmic Section. I wish here and at this time, formulate some views as to the methods of invesigation which have been impressed on me as best by dozen years of study, in the hope that any future nvestigators may profit, as they too rarely have in he past, by the experiences of their predecessors.

Few will question that the school should elicit and evelop the mental aptitude of the scholar,revealing, nd if possible, correcting his weak points; and the ime is past when its relation to the physical condiion can be neglected. Nor is it enough that *damage* o the individual during the educational process hould be avoided—that the "overburdening of the cholars," of which so much has been said, should be revented from producing "school myopia", scoliosis, r the many other ills more or less fairly laid to its harge. Physical education and development is demanded as a part of the school régime; and the cholar ought to be made a "better all-around man," as well as mentally drilled for a special career, if he shows aptitude or has decided on one already. At the least, any disqualifying physical infirmity should e discovered, and opportunity given to remedy it or avoid its effects. Knowing that four per cent. of all boys are more or less color-blind, it is our duty to find out which are the unlucky ones and not leave them to discover it in some disastrous fashion. Time and again I have known candidates for the navy, who were exceptionally good scholars, possessed of splendid physique, coming long distances, and perhaps wasting much time and money in special preparation, only to be incontinently rejected as color blind,and sent home as completely discomfited as though they had been proved imbecile.

It is a matter for great congratulation that the subject of the physical education of the pupils in the schools is now receiving growing consideration. Most colleges have placed their gymnasia and athletic sports in the care of someone more or less fitted to restrain, as well as to promote, the exercises of the scholars. Scientific methods of physical examination and development have made increasingly good results possible; and in most of these institutions systematic exercise is reducing the number of the weaklings, guiding and controlling to good purpose those aspiring to be athletes, and, still more important, is raising greatly not only the standard of muscular strength, but also the good health and mental capacity of the main body of the students. Similar results are being gained in the public and private schools, and will grow still more common as the advantages become more manifest and they vie with each other in their efforts to attract pupils.

Such a semi-annual physical examination, made in the William Penn Charter School of Philadelphia, last Autumn, furnished the results which form the text of my present paper. It was made by the Director of Physical Education as to all details of height, weight, girth of chest and limbs, and the dynanometer and spirometer results; and by a physician, Dr. Spenser Trotter, as to the medical aspects, such as the auscultation of the heart and lungs, and the condition of the eyes and ears. This latter part I undertook for him, as he was in doubt as to the best practicable methods; and it is in the belief that an account of it may be of value to others having such work to do, that I now make this report.

Every such examination is fraught with great difficulties. A certain number of parents will be found hostile to it, regarding it as an invasion of their American liberties and as prompted solely by sordid motives on the part of the examiner. Great prudence must be used in answering any of the questions, general or personal, which are asked by the scholars; and no report should be made, as a rule, except the official one to the school authorities. Much time and labor must be expended upon it, with the consciousness of having done useful and scientific work as the only reward; and the man who begins enthusiastically is apt to find the task very wearisome, and the sacrifice of time and energy a very severe one, before it reaches its close. For this reason a clear understanding of what should be learned, and a knowledge of the great shortcomings of the many examinations thus far made, are prerequisites to the undertaking. Too extensive a work should not be attempted; while on the other hand, although hundreds of thousands have already been examined, there is need for much further and better study, especially of small groups, repeatedly investigated.

My purpose was to obtain results that should be practically and scientifically valuable. Subjective tests, therefore, constituted but one part of the investigation; and, as time was an important question for all concerned, the methods to secure systematically full and accurate results were very important. A critical study of nearly every one of the two hundred or more examinations which have been made, and some previous experience in applying the ideas derived from them, as to what is desirable and practicable, have convinced me of the necessity of some tests, and the worthlessness of others commonly employed. The method pursued, closely similar to that used by Risley in 1879–80 and by myself in 1884, and now recommended, is as follows:

An accurate test card and astigmatic chart, such as Wallace's, are placed 6 meters away from the seat to be occupied by the pupil, well illuminated by an argand burner a half meter distant, which is hid from view by a black screen, perforated so as to give a point of light for muscle tests, and quartered with white lines to indicate the amount of any deviation found. Behind the pupil another argand burner furnishes light for tests of the near vision and for ophthalmoscopy and retinoscopy. The room is otherwise darkened by drawn shades. The Maddox prism or rod, a "prism mobile," test glasses, Holmgren worsteds, ophthalmoscope, etc., must of course be within easy reach. Well-planned blank forms should be used for recording systematically and completely every result of the study; and much time and labor can be saved by a competent assistant, but most valuably as a mere clinical clerk, leaving all actual tests to the examiner himself.

Working upon this plan, the distant vision is first determined, each eye being screened in turn by a black card, and the subjective recognition of astigmatism tested upon the radiating lines, which should be the parallel bands of Green, not the simple radii. The muscular balance is then tried for the distant point of light, and any deviation measured by reference to the lines upon the screen or by the interposition of the prism mobile. The near vision for fine type, usually D. = 25, is then tried and the punctum proximum carefully noted, with the p. r. in myopia, etc. The Graefe test with a very fine dot-and-line, or the simple test which I have advocated (Trans. Amer. Ophth. Soc., 1889, *Medical News*, September 7, 1889), of estimating the amount of movement of the eye from a position of rest under cover to that of fixation upon the fine object to which the fellow eye has been directed, will give prompt measure of any insufficiency of convergence, etc. The ophthalmoscope, in the upright image, gives the details of the eye-grounds, the condition of the media and the apparent refraction. The retinoscopy, with the plane mirror from 4 meters distance, gives delicate qualitative indication of the refraction, aided at need and made quantitative by a glass or two from the test case; and the test of distant vision, with any glass apparently required, or with that worn, often furnishes valuable data. The latter is quickly measured by neutralization, and when and how it was obtained learned by a question or two. A moment's use of the pen gives rude but valuable sketches of any anomalies of vessels, conus, etc.; the field can readily be taken in any case calling for it; the general and the ocular condition of health can be learned, with any note of inflammation of lids, conjunctiva or cornea, deviations of the eyes, apparent or actual, nystagmus, etc. A moment spent over the worsteds (on which each eye should be separately tested, and better by daylight), and unless the ophthalmometric measurements are desired, the examination may be terminated. In short, the entire examination usual in the office work of the careful specialist can be carried out; as it should be, if we are to learn the actual condition of the scholars' eyes—for every careful worker is aware that errors enough are possible even in the fullest and most scrupulously exact first study. Even when recording all these data myself, each examination could be completed in five minutes or less; and an expert observer, with a good clinical clerk, ought to be able to examine twenty or more in an hour.

As to the results of the examination, I shall shortly report elsewhere: it is sufficient to say that the results accord with those of my previous study of the eyes of medical students (Trans. Pennsylvania State Medical Society, 1885), and with the summarized results of all the previous investigations, as critically analyzed in my papers on "The Refraction of the Human Eye," *Amer. Jour. Med. Sciences*, July, 1885, and in the Transactions International Ophthalmological Congress at Heidelberg in 1888. There was a ow percentage of emmetropia, few myopes, hypermetropic refraction predominated, and astigmatism was proved in nearly half the eyes. Color blindness was rare, being found in but nine cases, and there was only one case of retinitis pigmentosa; but a notable group of individuals was found where the conditions demanded prompt reference to their medical advisers for treatment of threatening disorders or the correction of serious optical defects.

SCHEME FOR RECORDING EXAMINATION.

School . . . . Class . . . . Date . . .
No. . . Name. . . . . Age. . . . . . Sex. . . .
Condition of Health . . . .
Condition of Eyes . . . .
Distant Vision . . . . O. D. . . . . O. S. . . .
Astigmatic Lines . . . . O. D. . . . . O. S. . . .
Muscular Relation—Far. . . . . Near . . .
Accommodation—Type. . . . . O. D. . . . . O. S. . . .
Color Perception . . . . O. D. . . . . O. S. . . .
Refraction—Ophthalmoscope O. D. . . . . O. S. . . .
" Retinoscopy. . . O. D. . . . . O. S. . . .
Eye-ground—O. D . . . . O. S. . . .

Dr. Samuel D. Risley, Philadelphia:—I would urge with Dr. Randall the importance of this thorough and careful examination if the work done is to be of any scientific value. I do not believe that the simple cursory testing of the sharpness of vision and the determination of the manifest refraction by glasses give results of any value when compared with the thorough work suggested by the author of the paper. Unless sufficient care is exercised to secure approximately accurate results the work is practically valueless. Such careful work gives data from which can be obtained the relations of the different refractive conditions to the pathological changes which accompany them. I am glad that Dr. Randall has brought this subject to the attention of the session.

Dr. Francis Dowling, Cincinnati:—I have been much interested in this subject of the examination of the eyes of school children. Three years ago, I commenced a series of examinations in the schools of Cincinnati in order to determine the percentage of nearsightedness among the scholars. The great difficulty is to get the consent of the principals of the schools to put a mydriatic into the eyes of the pupils. In the cases that I examined, I arranged to go on Friday night and drop in the mydriatic so as to have the eyes in fair condition for study on Monday. There was almost a crusade against me for my work. I made a report to the school board, and the paper was referred to the committee on hygiene, and that was the last I heard of it. If we could get the members of the school boards interested, we could do a great deal of good. There are many evils in the way of light, position of the desks, etc., that could be remedied, and a great deal of trouble saved. In one school, the light was so bad that 73 per cent. of the children were nearsighted. I called the attention of the principal to it and he had the desks altered, but after he had given the order the school committee ordered the desks back again to the old position. That is the trouble in trying to get anything like a scientific result.

Among the German scholars I found uniformly about one-third more of near-sightedness than among the English speaking scholars. The German books seemed to be largely at fault in the production of this larger amount of near-sightedness. I suggested to the school board the advisability in the next contract for books, to have the books printed in the latin characters instead of the German. I got most of the German members to come to my view after showing that in Germany most of the text books are printed from latin type.

Dr. B. Alex. Randall, Philadelphia:—I doubt if any further words are needed, as I have probably said quite enough in regard to the general aspects of the question. I hold the belief that this investigating of eyes presumably normal, such as we find in school children, is almost the sole way of understanding what constitutes the usual, if not the strictly normal, refraction of the human eye. It is from the investigation of large numbers in some such fashion that we are to obtain our basis from which to deal with the whole question of the correction of refraction-errors and other conditions which we regard as evils, and to gain a comprehension of other more strictly hygienic questions of school influences upon the eyes of the pupils. But these things should be carried out primarily with the intention of directly helping, guarding and protecting the children under examination, removing if possible the faulty conditions under which they work and picking out those who are unable to stand the pressure which their fellows can safely bear. The school authorities must be furnished with the results; the detailed reports must be made to and for them alone, that, as in the case to which I have referred, the individual results of the examination may be sent to the parents and guardians for them to act on as they see fit. It is through the school authorities that the examinations are to be made and to be utilized. They must be in such form as not to interfere too much with the school work; but we must do our duty in such a way as to get results that will not be worthless and misleading. In none of these cases of color blindness, retinitis pigmentosa, or other serious lesion, or of large refraction errors even with low vision, had the conditions seemed recognized in a previous examination. This is the condition in a large proportion of these examinations; and I fear that it is often so even when undertaken by men professing to be ophthalmologists. I have shown that a fairly complete examination can be made in a period varying from three to five minutes, and I hope thus to remove the excuses for slipshod work and to make clearer the methods of meeting the requirements of these cases.

MANIFEST AND LATENT HYPEROPIA.

Read in the Section of Ophthalmology, at the Forty third Annual Meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY EDWARD JACKSON, A.M., M.D.,
PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC, SURGEON TO THE WILLS EYE HOSPITAL, ETC.

It has frequently happened in the history of medicine that to clearly formulate an idea so that it could be practically applied in farther study, and especially in order to enforce it on the attention of others, it has been given more prominence and more definiteness than it really deserved. This I believe has happened with the conception of latent hyperopia. Unquestionably latent hyperopia exists very frequently. But it probably does not exist so frequently, and to the extent that might be inferred from much that is said about it.

For several years I have made it a rule to ascertain as accurately as possible the state of refraction before using a mydriatic, especially in what seemed to be cases of hyperopia almost, or completely free from astigmatism. From my last three years' records of errors of refraction I have sought out all those in which a record was made of the manifest and after the use of a mydriatic of the total hyperopia. The summary of these, including 214 eyes, is presented in the following table:

TABLE I.

Age.	Having no Latent H.	Having Latent H.	Per. cent of H. Latent.	Amount of H. Latent.
15	79%	21%	30%	0.70 D.
20	79	21	26	0.45
25	77	23	24	0.57
30	64	36	33	0.62
35	62½	37½	26	0.41
40	68	32	20	0.31
45	62½	37½	15	0.39
50	53	47	33	0.33

In the above table the first column gives the ages, the second gives the per cent. of eyes in which there was no latent hyperopia, the third column the percentage of cases in which a portion of the hyperopia was latent, the fourth column the average per cent. of the total hyperopia that was latent, in those cases in which any latent hyperopia existed; and the fifth column the average amount in dioptres of the latent hyperopia among those cases in which any portion of this hyperopia was latent.

Before discussing the rather startling facts that this table reveals let us consider for a moment its relations to any similar investigation by other observers. So far as I know the observations most nearly comparable to these are those recorded by Daniels of Berlin (*Centralblatt fur Prak. Augenheilkunde*, July-August 1883; and *Ophthalmic Review* Vol. ii, p. 300) based on the cases presented at Hirschberg's Clinic, measured ophthalmoscopically, most of them by Hirschberg himself. The points for comparison may be indicated by the following table:

TABLE II.

Age.	Proportion of the Total Hyperopia that is manifest.			
	One-third.	One-half.	Two-thirds to three-fourths.	All.
10 or under	85	10	5	
11 to 15	78	18	4	
16 to 20		76		24
21 to 25		68		32
26 to 30		14	62	24
31 to 35		11	63	26
36 to 40			28	72
41 to 45			13	87
46 to 50			5	95
Above 50				100

In this table the first column gives ages; the second indicates the percentage of cases in which the manifest hyperopia was not more than one-third of the total hyperopia; the third column gives the percentage in which the manifest was one-half the total hyperopia; the fourth column, the percentage in which the manifest was from two-thirds to three-fourths of the total; and the last column the percentage in which all the hyperopia was manifest.

Donders (Accommodation and Refraction, p. 239) thought that at twenty years about one-half the total hyperopia was manifest, at forty, more than three-fourths, and at fifty-five, latent hyperopia had ceased to exist. It is interesting to compare these earlier statements with the figures given in columns two, three, and four of table I. The discrepancy between them is startling, and in view of the high scientific attainments of the other observers demands explanation. The data upon which Donders founded his opinion are not given. The basis of Daniels' paper was a comparison of the hyperopia estimated by the direct ophthalmoscopic examination, which was assumed to be the total hyperopia, with the amount of manifest hyperopia estimated in the ordinary way. In view of my own experience I can only conclude that very inadequate means were taken to get the maximum of manifest hyperopia or that the estimates with the direct ophthalmoscopic examination were quite inaccurate, or that the cases examined were radically different from those we meet in Philadelphia. My own statistics are based on carefully ascertaining the amount of manifest hyperopia by repeated trials under the most favorable conditions, by the use of test-lenses and test-type at the range of four or six metres, taking the strongest convex lens that allowed the best distant vision as the measure of the manifest hyperopia. And taking the correcting lens as chosen under full mydriasis, and confirmed by the shadow-test and the direct ophthalmoscopic examination, as the measure of the total hyperopia.

A word as to the method of obtaining the maximum of manifest hyperopia. My method is to make the test after the approximate amount has been ascertained by the direct ophthalmoscopic examination. The eyes after being allowed a moment's rest have placed before them convex lenses strong enough to certainly over-correct the hyperopia. After finding the extent to which these lenses blur the vision, their strength is gradually reduced by changing them, or placing before them weak concave lenses, until the change no longer improves the vision. Then a card is held first excluding one eye, then the other, to ascertain if both see equally well, and if one eye shows a distinct inferiority to the other the lens before it is still farther reduced until it equals the other in vision, or ceases to be improved by the change. The essential points in such a test are that the lens should over-correct the hyperopia and that all changes should be made without allowing the patient to look without his lenses, and that the two eyes shall be used and tested together. Sometimes I have been able to increase the amount of manifest H. by having the patient read small print through the lenses for a few minutes and then look up at the test card, a trick I learned from my friend Dr. Chas. H. Thomas; and at other times I have gained a very little by placing before the eye an abducting prism, but these are of minor importance.

I am well aware that obtained in this way the manifest H. was distinctly higher, often very much higher, than could be discovered by testing each eye alone, or by commencing with weak convex lenses and increasing their strength gradually until the increase caused a perceptible blurring, and that to a corresponding extent the H. remaining latent was diminished. *But I submit that it is this higher amount that* we ought to regard as the real manifest hyperopia—the highest amount that under ordinary conditions of distant vision the ciliary muscle could be induced to leave to the lenses for correction. It is only what remains after this has been taken from the total that really corresponds to our conception of latent hyperopia.

Again, it is the case that the lens which I took as the measure of the manifest H. was often such only for a brief period, and worn for a few minutes would cause a marked blurring of vision. I had intended illustrating this by one or more cases but I find that Donders in the very process of explaining hyperopia gives such a beautiful illustration of this, that I quote it instead. He *says*:[1] "*In my first investigations* of H. I encountered the difficulty of accurately determining the degree of this anomaly. Thus an eye sometimes at first refused every glass stronger than $\frac{1}{12}$, while it soon afterward gave the preference to $\frac{1}{8}$, and subsequently again chose $\frac{1}{16}$, or $\frac{1}{14}$." In this, which being put as a suppositious case it is fair to take as representative of Donders' experience, there is revealed what Donders according to other passages seems not to have fully appreciated, the extremely variable, inconstant character of the latency of hyperopia.

At one time I fully believed, as it is fair to understand that Donders believed, and as Daniels' statistics clearly indicate, that latency of a portion of the hyperopia was the rule, and its absence the exception, and in childhood and early life the rare exception. The accumulation of the statistics upon which this paper is based have slowly undermined this belief and their tabulation has swept it away altogether. Unless the experience here recorded is entirely exceptional, and it agrees so well with other observed facts that this is improbable, latent hyperopia must be regarded as exceptional among patients as they come to consult us. Whether or not it is more common among these hyperopes who do not so suffer from eye-strain, and therefore are not found among our patients is a matter worthy of careful investigation. But among patients, it is but little if any more frequent, in proportion to the total number of cases than is spasmodic myopia. Is it not rational to suppose that like the latter condition, it is often or largely due to a condition of irritation, or undue irritability rather than a normal tonic state, like that of the sphincters or the vaso-constrictor fibres?

I confess I have never been able to quite accept the idea of a muscular tonic contraction that should be normal in one eye, usual in hyperopic eyes, and quite abnormal and unusual in eyes that have a slightly longer antero-posterior diameter.

Turning now to the matter presented in table I, it is to be noticed that the figures in the first and second column indicating the relative frequency of latent hyperopia are directly opposed to what has been usually held and taught. It is shown that latent hyperopia is least frequent, 21 per cent., before the age of twenty; and most frequent, 47 per cent., between forty-five and fifty, a period at which, according to Daniels, it is almost always absent. It may be well to mention here that although no case of hyperopia latent after the age of fifty occurred during the time covered by these statistics, I have seen a few such cases. One of them was that of a man aged 51 with a total H. of 2.50 D., of which 2. D. was latent. That latency of hyperopia should become less common as the range amplitude of the accommodation diminishes, seems at first glance probable, but a little consideration will show that the reasoning that indicates this is superficial.

Latency of hyperopia depends on the power and activity of the ciliary muscle, and up to middle life these are not diminished. Removal of the punctum proximum depends on increasing rigidity of the lens, the effect of which is to lessen the extreme change of form that the contraction of the ciliary muscle is able to effect in it.

By the figures of the fourth column it is indicated that in those eyes that have latent hyperopia the proportion of the hyperopia thus masked, while varying widely in individual cases (from 5 per cent. to 100 per cent.), is not at all proportioned to the age of the patient, being about equally high before the age of fifteen and after forty-five. While this is true as to the proportion of the hyperopia that is latent, there is, as shown in the last column, some diminution in the amount of latent H. as measured in dioptres; indicating that as age advances, the cases of high hyperopia all become manifest, leaving only the lower degrees that remain partly latent.

Briefly to summarize, the facts to which this paper is designed to direct attention are these:

That the latency of hyperopia is essentially exceptional, inconstant, and abnormal.

That it is not more frequent or proportionately greater in childhood, or in early adult than in middle life.

That the amount of manifest hyperopia discovered depends largely on the method of testing for it.

And from these follow certain practical deductions, viz.:

It would usually be unnecessary to employ a mydriatic to render manifest the total hyperopia, if we only had some certain means of detecting the exceptional cases in which it is necessary.

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[1] Loc. cit.

A mydriatic is as frequently needed, and as strong a mydriatic is needed to render manifest the total hyperopia at forty-five as at fifteen.

In correcting hyperopia without the use of a mydriatic the assumption should be that the total hyperopia is manifest. To add something for assumed latent hyperopia will, in the majority of cases entail imperfect distant vision, which will continue as long as the lens thus ordered is worn.

In prescribing a lens correcting less than the total hyperopia, in allowing for latency of a part of the hyperopia, we are allowing for an inconstant, temporary, mainly abnormal condition, and should warn the patient of the probable early need for a change of lenses, and that the best and most permanent relief is not to be expected until such change is made.

Discussion.

Dr. Charles Hermon Thomas:—I agree very thoroughly with what Dr. Jackson has said in his paper. I almost regret that he has failed to repeat some things that he has said elsewhere in regard to the allowance for range, *i. e.*, the distance from the test letters at which measurement is made under a mydriatic. I formerly found many cases in which I believed there was latency before the mydriatic was used, or in which there was recurring spasm after the mydriatic, but since I have come to make the allowance of .25 D. for 4 meters in length, or approximately that, I have found very few such cases. In my experience latent hyperopia is scarcely more frequent than pseudo-myopia from spasm. I believe that with allowance made for range as Dr. Jackson has heretofore pointed out, we shall find few cases in which there is after-spasm of the accommodation.

Dr. H. V. Würdemann, Milwaukee:—As a rule I use homatropin in refractive work, and think that these cases of latent hyperopia are about as frequent as the cases occur in which homatropin does not reveal the total error—*i. e.*, about one in twenty. In these cases we are forced to resort to atropin. I usually give the full correction as brought out by homatropin, except in highly hyperopic cases.

Dr. F. C. Hotz, Chicago:—I wish to refer to two points in Dr. Jackson's paper. I was surprised that he found so small a percentage of latent hypermetropia in people up to 30 or 35 years. I was also surprised that the amount did not exceed .75 D. It is true that by letting people wear glasses which correct the manifest hypermetropia, often a part of the hypermetropia that we regard as latent, becomes manifest. But my experience is that wherever we find manifest hypermetropia of a certain degree, and correct that, suspension of accommodation always reveals an additional degree of hypermetropia, showing that there is a certain amount always kept latent in young persons.

In regard to the degree, I am sure that in cases of convergent strabismus, there is certainly always a higher degree of latent hypermetropia than .75 D.

The manifest hypermetropia often shows only 1. D. or 1.5 D., when the total is 3. D. or 4. D. In these two points my experience does not agree with the observations presented in the paper.

Dr. Jas. A. Lydston said: In response to Dr. Jackson's statements to the effect that latent hypermetropia is the exception and not the rule, in our cases of refractive error, it seems to me that we must appreciate fully what that term latent hyperopia implies, and this is to be determined by our particular methods of testing. For example, if we resort to the ophthalmoscope we must fully concur with the doctor when he says "latent hyperopia is the exception and not the rule"—but if we resort to the ordinary methods of testing, without paralysis of the accommodation, then I am convinced by all the cases that have fallen under my observation, and by the experience of all ophthalmologists, that a certain amount of the hyperopia present will be held in abeyance, and constitute the so-called latent hyperopia. Again, when testing our cases and tabulating our statistics it seems that we are prone to forget that the individual may be suffering with a debilitated condition of the system which reacts upon the accommodative mechanism, and thus reveals an error which would otherwise be obscured and thus constitute a latent error, and in this case be styled latent hyperopia. Then too, when the doctor states that the accommodative mechanism is not materially impaired till later life, it appears that his experience does not concur wholly in this respect with that of others. Moyer, basing his statements upon the admirable table of Donders, states that the accommodative power begins to wane as early as 16 years, and is quite noticeably impaired at the age of 30, still more so at 50 years, and is almost obliterated at 75 years. So that this would exercise an influence directly opposite to that claimed by the doctor, in rendering manifest otherwise latent cases of hyperopia.

Dr. B. Alexander Randall, Philadelphia:—There is one small point that is worthy of consideration. As every one is well aware, in standing there is tension of all the muscles concerned in maintaining the upright position, but we do not call that spasm. So in viewing distant objects in hypermetropia, there must always be a certain amount of accommodative effort, which need not be spasmodic but can be relaxed as soon as the need for it passes away. To call every accomodative action of this sort a spasm is a mistake unless it is spasmodically exercised. It is within the control of the individual in part, but is largely an automatic coördinative adjustment.

Dr. Edward Jackson, Philadelphia:—I perhaps did not make prominent enough the influence of different methods of testing. Take for example a case which I saw within a few weeks. There was total hyperopia of 3.5 D. and I could get 3.25 D. of manifest hyperopia. That was by the method which I have used as the basis of this paper. If I tested each eye separately, I could not get full vision with anything over 2. D. convex. The method of testing is essential in unmasking the hyperopia.

I can fully appreciate the surprise of Dr. Hotz, for no one could have been more surprised than I was myself when I found these facts. I fully believed when I commenced this investigation, that the facts would be such as are implied by Donder's remarks, and that up to 20 years of age one half or two-thirds of the hyperopia in almost all cases would be found to be latent. I was surprised to find that in such a large proportion, three-fourths of all patients up to twenty years of age, all the hyperopia could be rendered manifest.

THE FOURTH DEGREE PRISM IN THE CORRECTION OF HYPERPHORIA.

Read in the Section of Ophthalmology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 1892.

BY A. E. PRINCE, M.D.,
OF SPRINGFIELD, ILL.

Mr. President and Gentlemen:—My excuse for the presentation of a paper on the fourth degree prism in the correction of hyperphoria, is based on the belief that ophthalmologists as a body are not analyzing these cases with a view to correcting so small an amount of error.

I shall waste none of your valuable time by reference to the differences of opinion which prevail regarding heterophoria in general, but will proceed directly to give the results of my experience with the correction of hyperphoria of low degrees.

It has doubtless been the lot of every member of this Section to meet cases of asthenopia so nearly approximating emmetropia, and having so little apparent disturbance of muscular equilibrium, that it seemed impossible to account for the symptoms, and they have continued to suffer uncorrected.

These cases were made much less frequent by the valuable contribution of Dr. Chisholm on "The Value of the .25 D. cylinder," read before this Section in 1889, at Newport, for previous to that time, astigmatism of smaller degree than .50 D. was relatively seldom corrected.

In still further reducing this class of unrelieved asthenopias, the profession owes its profound thanks to Dr. Stevens, for, whether or not we accept all that he has taught, we must acknowledge that he has given us a nomenclature, instruments and a method of study in muscular dynamics which every student and operator to-day turns to valuable account.

Still a certain number of cases have refused to yield, and have continued to visit persecution upon us by returning again and again, having failed to get relief, whatever prescription may have been made.

Not having a prism in my trial case weaker than one degree, nor an instrument of greater precision than Steven's first phorometer, it was for me, impossible accurately, to measure errors of less than one degree, hence this remained the unit until the publication of the "Maddox Rod Test."

The use of this instrument rendered it apparent that degrees of hyperphoria, varying from one-eighth degree to one-half degree, were many fold more common than all the grosser errors combined, just as an astigmatism of .25 D. is found to exist more frequently than any other degree.

The first practical result, so far as my practice was concerned, occurred in the following case:

Miss L. B., æt. 21, had previously been under my observation during two periods of several weeks each, and had suffered with the following symptoms:

For about five years has seldom passed a day without an aching in and back of the eyes. About 2 P.M. a tired feeling would commence, and grow worse during the remainder of the day. There would often be a neuralgic pain in the right side of the head, which would persist until relieved by sleep. She could not read for five minutes with freedom from discomfort.

An analysis of her refraction revealed less than .25 D. of either spherical or cylindrical error. On one occasion I prescribed plus .50 S., and on another, an orthoscopic combination of Brudenel Carter, consisting of plus 1.25 S. with three degrees prism, base inward, which I formerly used a great deal. This latter glass relieving proportionately both recti and ciliary muscles, gave her considerable comfort, and enabled her to do a moderate amount of work, but even this, after a time, was no longer helpful, and her asthenopia and suffering from headache increased.

Again I tested her adduction, abduction, and right and left sursumduction, but discovered nothing. Again I went over her refraction under complete mydriasis with the same result. Upon the application of the rod test, it was observed that she had so slight a degree of hyperphoria that it was reversed by a prism of one degree. As this error seemed to be constant, I ordered a prism of one-half degree which was subsequently replaced by two of one-fourth degree each, base downward before the left eye, and upward before the right.

The first evening after commencing to use the glass she could read without discomfort, and has continued free from headache or discomfort from that day to this.

Some months since, in talking with one of the prominent advocates of graduated tenotomy, I was assured that the probabilities were large that a much greater degree of hyperphoria would be found to exist if the patient were retested after this length of time. Accordingly the patient was summoned, and an examination made to ascertain, if possible, whether or not the relief came from partial correction of a much larger error. Upon this examination, to which I brought the aid of the Steven's improved phorometer, I found an apparent one degree, which increase I had her wear for twenty-four hours, but the original prescription was preferred.

After witnessing the benefit derived from the fourth degree prism in this case, I ordered trial prisms of half and quarter degrees, and thereafter submitted all doubtful cases to analysis, relative to ascertaining the presence of the smallest amount of hyperphoria detected by the rod test. While a quarter to a half degree was found in a large proportion of eyes, and often one, two and sometimes three degrees were observed with no asthenopia, or other reflex symptoms, still a sufficiently large number of cases were met in which the various local and reflex disturbances were traceable to, and relieved by the fourth degree correction, that I felt encouraged in pursuing the inquiry, and now regard no examination complete which is conducted with less precision.

I have not prepared a statistical collection of facts, and results of the multitude of tests made for adduction, abduction and right and left sursumduction, remote and in accommodation, but have chosen, to serve my purpose, brief extracts of a dozen cases selected to illustrate some of the various phases of discomfort, in which relief has been found to result from the use of the fourth degree prism, in most of which all previous remedies had failed.

Case 2.—Illustrating emmetropia with one-fourth degree left hyperphoria. Miss Mary L. æt. 24, commenced eight years ago to complain of photophobia and incapacity to use the eyes at night. One of the early symptoms was a tendency to squint the eyes, and scowl in reading. She never experienced very much pain in the eyes and only occasionally suffered from headaches, and then not very much. Both in reading and writing, the letters would seem to dance, and the lines would seem to wave. This latter symptom was relieved by a colored glass, which was worn for a year, after which study was more or less discontinued, and the colored glass was worn occasionally. Five years ago I was consulted and failed to find any error whatever, but gave her a plus .50 D. S. with the hope that the diminished strain on her accommodation might give the eyes some comfort. These glasses were worn for reading only, and helped some, but, notwithstanding, the main symptoms have continued, and she has never been able to read at night, or do any work continously without discomfort. After attempting to use the eyes a burning sensation is experienced the following morning. After looking at anything intently for a short time the eyes feel as though they had been wrenched, the left eye particularly.

She consulted me again on March 29, 1892, but repeated examination failed to discover any refraction error.

One-half degree of left hyperphoria was discovered, and a prism given for its correction. This was worn in the trial frames for two hours with perfect ease, and she expressed a feeling of rest which had not been experienced either with or without glasses for several years. One-fourth degree in permanent frames was ordered before each eye, and she was requested to report in a month.

Before that time she returned, saying that the permanent glass had not been so restful as the trial glass had seemed to be, and on examination it was found that the hyperphoria was scarcely one-half degree, hence slightly over-corrected. One fourth degree was put in trial frames, and she was induced to remain a few days, during which perfect comfort was experienced. The correction was made permanent, and was found after one month to be satisfactory.

This case is one of several in which the discomfort was relieved by a fourth degree prism to one eye only.

Case 3.—Illustrating plus .50 C. 90° one-fourth degree right hyperphoria.

Miss Ida S., æt. 19, consulted me from Lincoln, Ill., where she was attending school. She complained as follows:

For several years she had been obliged to save her eyes, and experienced photophobia and pain on using them. She was unable to study more than twenty minutes, and was afraid she would be obliged to give up her school. A burning and smarting of the lids was experienced on application for even a brief period of time.

Upon examination, under complete mydriasis, plus .50 C., axis 90 degrees was found and prescribed. Upon first examination no heterophoria was discovered. The glasses were comfortable, yet she could not endure continuous work. After three months of rest she was no better. A second time she consulted me, and upon examination I found one-fourth degree of left hyperphoria. It was also found that she was quite sensitive to the reversal of the prism. It was ordered in a light trial frame, to be worn over her cylindrical correction long enough to demonstrate its efficiency.

After two weeks she reported that the strain seemed relieved, and she could do a large amount of work while wearing the trial glass, but when it was left off, she could use the eyes but a few minutes.

Case 4.—Illnstrating recurrent conjunctival hyperæmia.

Miss Maude T., Springfield, Ill., æt. 18. While in school in the winter of 1883, the eyes became inflamed and red, and her family physician prescribed for her. The eyes were bandaged, and she was confined in a dark room for about four days. Improvement followed, and she was able to resume her school work for the remainder of the year, but the eyes did not become quite comfortable. During the following vacation the eyes were not in use for the purposes of studying, but still there was no time when she became quite unconscious of having eyes. From this time until the winter of 1887 she had no especial difficulty.

In the winter of 1887 she began to suffer from weakness and was taken out of school, and did not resume her studies for the rest of the year. In 1888 she had no especial difficulty, and finished her school year.

In 1889 she began to have trouble in March, and was treated by her family physician for granulated lids, which recovered in a large measure in the course of a few months, but school was not resumed until the following fall.

During the winter of 1890-91 she did some studying at home, and experienced no trouble with the eyes; was fairly comfortable up to February, 1892. At this time the eyes broke down, and she again consulted her family physician, by whom she was treated for inflammation until March 1.

In all of these attacks the trouble with the eyes was preceded by headaches which "seemed to extend to the eyes."

On consulting me she complained of burning of the eyes, and a feeling as though the eyes had been wrenched. Pain back in the sockets was experienced on extreme lateral movement.

Examination revealed an astigmatism of .25 D. and hyperphoria one-half degree. The astigmatism was ignored for a time, and trial frames were worn for a week continuously with one-fourth degree prism, base upward, before the left eye, and downward before the right. Absolute comfort was experienced, and a glass was ordered in which the cylindrical error was incorporated.

At the end of a week all inflammation and soreness in the muscles had disappeared, and she could resume her studies with comfort.

A permanent glass was given, and she reported a month later, "Eyes absolutely restful."

Case 5.—Illustrating rapid nictitation. Kirk O., Petersburg, Ill., æt. 11. Called on me April 1, 1892, with a history for the past six months of holding his book very close to his eyes when reading, and of squinting at the same time so as to secure a very narrow palpebral aperture. In the evening he was subject to very rapid winking whenever looking at books or pictures, and would have periods of rubbing the eyes. Examined under homatropine, it was found that he was emmetropic. One-half degree of left hyperphoria was discovered, and a prism of one-fourth degree, base downward, before the left eye, base upward before the right, was prescribed and worn for five weeks, when I saw him for the second time. All symptoms of winking and squinting had disappeared. Since wearing the glasses the book is held at the usual range.

Case 6.—Illustrating asthenopia with astigmatism; hyperphoria one degree, and esophoria nine degrees.

(One of the most interesting cases is the following, on account of the combination with anisometropic-astigmatism and esophoria.)

Louis H. M., editor, æt. 32, asthenopic symptoms commenced about seven years ago, and he especially noticed a sensation which is described by the patient as "pulsation of the blood vessels of the lower lid," for which he sought relief in St. Louis. Glasses were prescribed to correct an error of refraction; not deriving comfort, he returned at intervals varying from one to two months, for nearly two years, during which the right glass was changed several times. He then sought relief in Chicago, where he made five trips extending over a period of four years, and at each visit received a different pair of glasses, and on the last, an additional glass for reading. No permanent comfort was obtained, and he was obliged to discontinue his editorial work, and almost all outside reading. Reading by artificial light was out of the question.

In November, 1891, he suffered from two superficial ulcers of the cornea, which yielded to treatment. A month later I was consulted for the first time, and found right eye minus 1.50 S., minus .75 C., axis 180°, left eye plus .25 S. minus .75 C., axis 180°; esophoria 6 degrees, hyperphoria 1 degree.

The sphero-cylinder was ordered, and the heterophoria ignored until April 4, 1892. During this period he had been able to use the eyes to a somewhat greater extent, but had never experienced a day of absolute comfort. On April 4, hyperphoria, one degree and esophoria nine degrees were found. In order to discriminate from which correction the greater relief was obtained, the esophoria was ignored, and half of the hyperphoria was corrected by one-half degree prism, base downward, before the left eye. On April 5 he reports that he does not remember a day in two years so nearly approximating absolute comfort.

April 6.—The remainder of the hyperphoria was corrected by a one-half degree prism before the right eye.

April 7.—Not so comfortable.

April 8.—Still not so comfortable; return to one-fourth degree in each eye, which, after a week of comfort, was incorporated with his sphero-cylinder.

He was told that he still had a high degree of esophoria, and might require a tenotomy or prism.

June 6.—Says, "I suffer from absolutely no discomfort; can now read ten or twelve columns of fine newspaper print, without realizing that I have used my eyes."

This case illustrates the relative effect and the importance of detection and correction of a small amount of hyperphoria, as compared with a large degree of esophoria.

Case 7.—Illustrating neurasthenia. Miss Nellie A., æt. 20, teacher.

Consulted me in January, 1891, with the following history. At about ten years of age she remembers being troubled with blurring, and was obliged to remain out of school a portion of the school year. She cannot remember when the light did not hurt her eyes.

At twelve years of age she found some relief from colored glasses, which were worn to and from school. From this time she had a feeling of weight pressing down, seemingly over the eyes, so that a great effort was required to look up. Together with this, she suffered from general physical exhaustion, and had a feeling as though she was straining every nerve in the effort to fix the gaze on objects. This was worse when fatigued, and particularly experienced in the afternoon of every day, and by night she was usually sick with headache.

In the morning after a good night's sleep she would feel comfortable for a variable time, depending on the use of her eyes. With increased application trouble would begin about the middle of the forenoon. She always felt better on cloudy days.

When looking at an object for some time, the eyes would assume a feeling as though they were fixed in a staring gaze, which feeling would continue though the eyes were directed towards various objects, and it was only an effort of the will that this unnatural feeling could be shaken off.

After reading, she would become very nervous, so that she could not write on account of trembling. In this condition she could not read two minutes.

She was often troubled with "twitching of the eyes." The muscles around the eye would jerk in a very amazing manner. A prominent symptom was that of dryness, provoking an inclination to rub the margins of the lids.

I found by an examination under mydriasis, emmetropia, right hyperphoria one-half degree, to the correction of which she was very sensitive. Prescribed R. E. one-fourth degree base downward, L. E. one-fourth degree, base upward.

The following letter was received after one week:

"I am very much pleased with my glasses; it will be no cross for me to wear them all the time, for they are so restful; I cannot bear to take them off. Those headaches have not troubled me, and I have not been so nervous. Everything looks very plain, and it is such a relief not to have to strain every nerve to see any object."

It is five months since commencing the use of the glasses, and she now tells me that she has not had a single headache except on one occasion when she broke the glass, and was without them four days.

The first day she noticed that she was much more tired than usual, but did not suffer from pain. On the second day, and until she received the glasses again, she suffered in the old manner, and to a similar degree.

While wearing the glasses there is no photophobia, but leaving them off will provoke photophobia and fatigue in from one to two hours. She regards the relief from the glasses as absolute.

Case 8.—Illustrating drowsiness. Mrs. C. F. D., æt. 29, Ashland, Ill.

She commenced having trouble five years ago, for which glasses were prescribed. They were worn three years, more or less.

During the last year and a half, they have not relieved her condition. She now consults me again on account of pain over both eyes, extending into the temples. This pain is aggravated by looking down. Discomfort increases as the day advances, and is proportionate to the use of her eyes.

Occasionally the eyes burn, lasting for short periods of five to ten minutes. Complains of drowsiness coming on during the day at irregular intervals.

These spells are sometimes of short duration, but may continue all day. Almost invariably gets sleepy immediately after supper, and drops off to sleep unless compelled to remain up. Examination reveals one-half degree of left hyperphoria.

Independent of eye pain, has pain in back and back of head; cold feet and hands.

℞. R. E. one-fourth degree, base up.
L. E. one-fourth degree, base down.

Relief was prompt, and she reported after one month that she could open her eyes wide, with no tendency to frown, and that the symptoms of drowsiness had disappeared.

Case 9.—Illustrating epiphora. Miss Lizzie L., æt. 14. Presented herself for examination Jan. 30, 1892. She complained that for about two years she has been troubled with excessive lachrymation, and almost constant burning of the eyes. Objects seemed to blur at times, but she has never been troubled with seeing double. She has suffered from frontal headaches for several years, which have recently been very bad. Upon examination it was found that she was emmetropic, and that she had left hyperphoria one-half degree and esophoria three degrees. She was especially sensitive to the prism which corrected her hyperphoria, and I concluded to ignore the esophoria and correct the hyperphoria by a prism one-fourth degree before each eye. She reports as follows, March 7, 1892: "I promised to let you know how my eyes were after wearing my glasses one month. I could not do without them now, they have done me so much good. I never have the headache as I used to, and I can read or sew all day without having to rest my eyes. I very seldom have to wipe them, and before, it was every five minutes."

Case 10.—Illustrating recurrent migraine of severe type. Mrs. T. S., Decatur, Ill.

Following measles five years ago, she complained of terrible headaches, associated with confusion of sight, which she called "blind headache." These headaches would yield to no treatment, but after several hours, she would drop to sleep and awaken refreshed. During the intervals which were from a week to ten days, she would not suffer from eye symptoms, and could do any kind of fancy work.

Having exhausted the patience and skill of her family physician, she was recommended to consult an oculist and ascertain if any possible trouble could be found in the eyes to account for the recurrence of the headaches. This was in November, 1891. It was found that she had minus .75 C. axis 0.°, each eye, and one degree of right hyperphoria. Two prescriptions were made in order to ascertain which would be preferred; one of one-fourth degree each eye, and the other of one-half degree on cylinder of minus .75 C., axis 180 degrees. She reported that while the weaker glass was worn with comfort, she could not wear the stronger. She reported to me again June 4, 1892: "Since wearing my glasses, now eight months, I have never had a bad headache, and could not be induced to go without them."

Case 11 illustrates one of the worst types of migraine without eye symptom, but relieved by correction of hyperphoria and astigmatism. Joseph K., æt. 38, jeweler. For fifteen years has suffered with violent attacks of hemicrania, averaging once a week. There are no symptoms of eye strain. Reading does not provoke attacks, but they are precipitated by travel and sports. A day in St. Louis or Chicago, or fishing or hunting, is followed by an attack. These attacks last from sixteen to thirty-two hours, and during the severity the patient can neither sit nor lie, but must rest in a reclining position with eyes closed.

His family physician suggested an examination of the eyes, with the following result: R. E. plus .50 S. plus 50 C. 90°, ¼° hyperphoria; L. E. plus .50 S. plus .25 C. 90, ¼° cataphoria.

He was more sensitive to the hyperphoria than to the sphero-cylinder, and a glass was made correcting these elements.

He has worn the glass sixteen months with but six attacks, but one of which was as severe as those from which he formerly suffered.

Case 12.—Illustrating burning of the lids and headache. Miss Minnie B., Greenview, Ill., consulted me January 1, 1892, regarding a headache which originated in Germany three years ago, and which had persisted ever since, and resisted the action of medicine on numerous occasions when she sought treatment. Headache was mostly frontal, and accompanied by a burning sensation of the upper lids, and a tendency for the eyes to close. She would frequently have difficulty in opening the eyes and looking directly at objects, although she did not complain of diplopia.

The pain was at times worse in the morning, and at other times worse in the evening; nothing constant. Upon examination of her refraction, it was found that she had R. E. plus .25 C. 90 degrees, and L. E. minus .25 D. S. Right hyperphoria one-half degree, and esophoria four degrees. The prescription was made of one-fourth degree, base upward in the right eye, and downward in the left, upon which her correction was ground; esophoria ignored.

January 25. She reports to-day that she is greatly relieved; she has no more burning of the upper lids, and no more of the tendency of the eyes to close, and her headaches are greatly ameliorated. There is a slight discomfort at times which is scarcely worth mentioning.

The following matters of detail are urged, to secure the greatest possible degree of precision:

1. Secure a perfect Maddox rod test, which is thought to be superior to Stevens for these delicate measurements: first, because the images on the retina are entirely dissimilar and have no tendency to blend; second, from the fact that they can be superimposed, thus facilitating comparison, which is especially important in the detection of small degrees of error; third, because comparison is more readily made between the hyperphoria and equivalent corresponding cataphoria, thus eliminating errors of observation or statement.

From the fact that these rods are drawn, a certain portion of them are defective, being slightly conical, which can be detected by inverting the rod before the normal eye.

To increase the efficiency of the method, at my suggestion, F. A. Hardy & Co. have in process of manufacture a phorometer, the essential portion of which consists of two 2° prisms, which rotate in opposite directions over one another so as to present before the rod every fraction of a degree from 0, where they are neutralized, to six degrees, when they act together. An arc is graduated to one-eighth degree, so that the refraction can be accurately read off, as well as the nature of the error, whether it be esophoria, exophoria, or right or left hyperphoria.

2. Make the point of observation the smallest compatible gas jet. By doing this a narrower light streak is observed, which, when the rod is in the vertical position before the eye, should, in the absence of hyperphoria, exactly cut the flame.

3. Place the gas jet or taper before a dark background, which will increase the capacity of the patient to detect a small error. On several occasions hyperphoria has been overlooked, and other errors which were present corrected, later to find upon more careful observation with a reduced light and dark background, that one or two quarters were present, the correction of which gave complete relief.

4. Compare the hyperphoria with the corresponding cataphoria, to which it should be equivalent. In event of discrepancy in these cases, it has been found the best practice to correct the smallest degree in the trial frames, and test again to ascertain if more becomes manifest.

5. Following the suggestion of others, it is believed that a much larger percentage of satisfaction can be secured by being provided with a variety of light steel frames, with bridges of various heights and prominence, supplied with long screws to facilitate

changing of prisms, which should be worn for a time, either with or without such other correction as may be present, in order to ascertain whether the prism in question is acceptable to the patient. Each case is a law unto itself.

Some cases will be found in which the heterophoria is provisionally corrected with comfort to the patient, by the muscular adjustment, while in others an error of one-fourth degree will require a corresponding prism before relief will be obtained. In some cases the weight of the trial frame usually employed, is so great as to vitiate an observation, and lead the patient to pass judgment against the prism, which, had the light, well fitting frame been employed, would have been reversed.[1]

A word may not be amiss concerning the measurement of the weak prism, whereby the physician may be assured that his prescription had been filled by the optician. There are various methods known to the mathematical optician which are impracticable in the practice of the physician, who must, more than likely, rely on the method of neutralization. To this end, as well as in the original detection of the error, I have found the Maddox rod to serve best. Knowing the prismatic error possessed by one's self, and having corrected it, the rod causes the ray of light to appear to cut the flame seen by the fellow eye. The glass in question is now held before the eyes, when an appreciable vertical displacement will occur. The neutralizing glass is now placed before the glass to be tested when the equilibrium will be restored. This method is simple and can be operated by anyone having good binocular vision, and an approximation to orthophoria.

Dr. H. Gradle, Chicago:—The significance of any results diminish as they approach in numerical value the errors incident to the method employed. In criticising the results obtained with one-fourth degree prisms, I would only say that the least possible tilting of the spectacle frame from the vertical position will produce a difference greater than that mentioned. Most of us can recall occasional instances where patients were satisfied with certain weak glasses which on subsequent tests proved to be incorrect and sometimes almost the reverse of what was ordered, and still the patient was suited.

Dr. Samuel D. Risley, Philadelphia:—I should like to call attention to one error occasionally made in the construction of spectacles, although not a very frequent one. The optician will sometimes grind a compound lens upon a glass whose surfaces are not exactly parallel, so that the sphero-cylindrical lens will also be prismatic. I remember one case in which almost a 2° prism was thus produced by the carelessness of the optician.

Dr. Prince closing:—In answer to the hypothetical objection that many glasses are worn with comfort which from fault of lenses or frames are decentered so as to effect a prismatic action greater than ½°, it is sufficient to say that a great number of cases occur who are unable to work with freedom from strain after a spherical correction has been made, who are rendered comfortable by slightly decentering the lenses by readjusting the frames. The fact that the great majority of persons can wear badly fitting glasses does not militate against the claim that a few demand the absolute centering in the vertical meridian.

FACIAL EXPRESSIONS AS INFLUENCED BY THE OCULAR MUSCLES.

Read in the Section of Ophthalmology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY GEORGE T. STEVENS, M.D.,
OF NEW YORK.

In the course of some years of close observation of the anomalies of the muscles which govern the movements of the eyes, the fact that remarkable changes often follow the modification of these muscles led me not only to regard with greater care these facial changes, but to bring to the subject the aid of photography. Photographic portraits of more than two thousand persons have been taken, the records of whose ocular-muscle conditions have been carefully and repeatedly made.

We have thus for the first time a series of observations in which the facial expressions are registered by photography while pains-taking determinations of the ocular-muscle conditions are faithfully recorded. The result of the study has been to demonstrate that certain well defined types of facial expression are not only associated with but are dependent upon certain relative tensions of the oculo-motor muscles. With the state of equilibrium of the eye muscles, orthophoria, the expression is one of greater repose that with any of the states of heterophoria. The eye brows form each a moderate and regular curve, marking the border of the orbit, the lower border of the brow corresponding to the orbital border.

The inner extremity descends towards the nose, but does not turn downward into the depression bounded by the nose and orbit. There is no sharp turn or curve at either extremity. The mouth is nearly horizontal or curving very slightly upwards at the centre. The lips in repose are firm but not compressed, and the upper one is well proportioned. The chin is rounded, neither square nor pointedly oval. The lines of the forehead are not especially conspicuous. The facial lines are moderately spreading.

With esophoria the brows are compressed, the extremities often curve suddenly downwards, the inner extremity sinking into the depression bounded by the nose and orbital border. The palpebral fissure is usually less widely open than in orthophoria or exophoria. The lips are firm, the upper one short. The posterior portion of the alæ of the nose drawn slightly upward, the superficial lines or grooves upward from nose erect and distinct; especially in middle life and later; transverse lines upon the forehead low; the naso-labial and cantho-malar grooves spreading. The lower part of the face is broad.

With exophoria the brows are usually raised, often strongly arched; palpebral fissure often wide; upper lid rather conspicuous; upper lip long; corners of the mouth often drawn up and the mouth curving down at the centre; lower part of the face usually narrow; principal grooves of the face more vertical than with esophoria. The transverse lines on the forehead are mostly above the centre. Hyperphoria is characterized by irregular features. On the side, the visual line of which tends to rise above the other, the brow is depressed, while the brow of the side whose visual line tends downward is elevated. Thus the brow and neighboring tissues of one side aid in depressing the front of the eye, while, on the other hand, by the elevation of the opposite brow less demand is made upon the muscle which rotates that eye upward. These contrary actions demanded by the relations of the visual lines in hyperphoria affect the whole face resulting in a want of harmony of the two sides. The angle of the mouth, on the side on which the brow is depressed, is drawn upward, while the other angle is depressed. Thus one side of the face appears longer than the other.

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[1] Sets of a dozen frames with assorted bridges, and a series of prisms to fit, are furnished by F. A. Hardy & Co.

There are a number of sub-types depending on hyperesophoria and hyperexophoria. While there are apparent exceptions to these rules, as to most rules, and while the bony structure must give to the face its general form, the law is very generally prevalent.

The recognition of these types of expression is useful to the oculist as well as to the artist. Any one of the types may be modified or transformed to another type by modifications of the relative tensions of the muscles which rotate the eyes.

THE TREATMENT OF INCIPIENT CATARACT.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY A. J. ERWIN, M.D.,
OF MANSFIELD, OHIO.

The surgery mania is so prevalent in our profession that the suggestion of other therapeutic agents is not always tolerated; especially is this true of cataract. In fact, the modern therapeutics of cataract is excessively surgical. Noyes admits that cataract has been cured by medicinal agents, but it seems to him so questionable that he has not even formulated a treatment for it. While Edward Meyer "believes that the recorded cases of recovery from cataract by medication may be attributed to error of diagnosis." (Sic.) Such being the teaching of modern authors, it is not probable that many oculists have undertaken a persistent systematic treatment of incipient cataract. No one, I apprehend, will deny my contention that an incipient cataract, while the eye has an acuity of vision equal to the average aphakous eye should be stopped, if possible, even though there should not be any improvement of sight, but it is not necessary to argue this point before an audience of specialists, you all understand it; I shall, therefore, not delay in bringing before you the point at issue, viz., can the progress of incipient cataract be arrested? In answer to this question, I beg to present to you the history of a few cases of incipient cataract taken from the records of my own clinic, viz.:

Case 1.—Mrs. J. R. Richardson, æt. 50, Mansfield, Ohio. February 11, 1886. Incipient cataract, O. D. V=20-100. O. S. V.=20-100. Treatment, galvanism and tincture of iodine about the eyes three times per week, with iron tonics daily. When discharged after two months treatment examination showed O. D. V=20-40, O. S. V=20-40, which continues the same to this date (August 18, 1892).

Case 2.—John Hull, æt. 82; Mansfield, Ohio. June 12, 1886. Incipient cataract, O. D. V=20-200. O. S. V=20-100. Treatment galvanism and tincture of iodine about the eyes, three to six times per week, with elix. calisaya, iron and strychnia three times daily. When discharged after five weeks' treatment, he had O. D. V.=20-100, O. S. V.=20-50, which was maintained until about Jan. 1, 1889. He returned for treatment Aug. 31, 1889, with O. D. V.=light perception, O. S. V. =12-100. His former treatment was exactly repeated for six weeks; when discharged he had O. D. V.= not improved, A. S. V. =12-50, which continued as at date of discharge until his death, two and a half years later.

Case 3.—Mrs. E. Chandler, æt. 65; Mansfield, Ohio, Oct. 9. 1888. Incipient cataract O. D. V.= fingers one foot, O. S. V.= 20-60. Treatment externally, galvanism and tincture of iodine daily, citrate of iron, quinine, pepsin and bismuth with each meal. When discharged after two months' treatment she had O. D. same, O. S. V.=20-40. *Six months* later O. D. matured, but to this date O. S. maintains vision 20-40.

Case 4.—Israel Swineford, æt. 70, Pavonia, Ohio. May 4, 1889. Incipient cataract, O. D. V.=10-100, O. S. V.=5-200. Did not take treatment until July 23, 1889, at which time he had A. D. V.=5-100, O. S. V.=2-200, Treatment, elix. calisaya, iron and strychnine, with each meal, one drachm. With galvanism and tincture of iodine about the eyes three times per week. Dismissed after six weeks' treatment with vision O. D.=13-100, O. S.=2-200. July 4, 1891, no change. I have not seen Mr. Swineford since. (He had the grip a year since, and has now O. D. V.=3-100, O. S. V.=2-200, August, 1892.)

Case 5.—Mrs. John Hull, æt. 80; Mansfield, Ohio, Aug. 31, 1889. Incipient cataract O. D. V.=12-100, O. S.= 2-100. Treatment, galvanism and tincture of iodine about the eyes, with iron and quinine tonics with each meal. The applications were made from three to six times per week from Aug. 31 to Oct. 31, by which time O. D. had improved to 12-50, O. S. remaining at 2-100. There has not been any change in the acuity of her vision since.

Case 6.—Mrs. Jacob Schall, æt. 65, Mansfield, Ohio, Oct. 17, 1889. Incipient cataract O. D. V.=20-40, O. S. V.=20-40. Treatment, galvanism and tincture of iodine, with elix. calisaya, iron and strychnine. Dismissed Nov. 25 with O. D. V. =20-30, O. S. V.=20-30. No change in the amount of vision to this date.

Case 7.—Mrs. F. E. Cope, æt. 70. Mansfield, Ohio, Nov. 25, 1889. Incipient cataract and retinitis albuminurica, with general dropsy. O. D. V.=20-100. O. S.=15-100. Treatment, tincture Ferri chlor. and quinine, and later galvanism and tincture iodine over eye lids. Dismissed Jan. 14, 1890, with visual acuity O. D.= 20-50, O. S.=20-70. Albumen and dropsy had entirely disappeared. No increase of of cataract to this date.

Case 8.—Mrs. Henderson Richey, æt. 75, Mansfield, Ohio, Dec. 26, 1889. Incipient cataract O. D.=4-200, O. S. V.= 20-100. Treatment, galvanism and tinct. of iodine over eyelids, with elix. colisaya, iron and strych., daily. Dismissed Feb. 25, 1890, with vision O. D.=6-200, O. S. 20-50.

July 1, 1890, O. D. fingers at one foot, O. S.=20-40. July 1, 1891, I extracted R.= cateract at her demand against my judgment, O. S. being so good. Sept. 15, 1891 O. D. V.= 20-30 O. S. V.=20-40. Corrected, but unable to wear cataract glass on account of the confusion it caused as usual. O. S. cataract has not made any advance since.

Case 9.—Catharine Orwiler, æt. 68, New Washington, O., April 19, 1890. Incipient cataract, O. D. V.=20-50. O. S. V.= 10-100. Treatment, galvanism and tinct. iodine over eyelids daily, and citrate of iron and quinine. Discharged June 21, 1890. Vision O. D.=20-30, O. S.= 20-100. I have not seen this woman since, but I am informed that her sight is still about as good as when discharged.

Case 10.—Mrs. Susan Law, æt. 80, Mansfield, O. May 2, 1890. Incipient cataract, O. D. V.= 10-100, O. S. V.= 1-200. Treatment, elix. calisaya, iron and strych., with the usual application of galvanism and tinct. iodine. Discharged May 24, 1890, with vision O. D. 20-100, O. S. not improved.

July 9, 1891, O. D. V.= 20-100. O. S. cataract mature V= perception of light.

Case 11.—Mrs. S. B. Markel, æt. 50, Ashland, O., Nov. 18, 1890. O. D. posterior capsular cataract with fluid vitreous, vision =light perception. O. S. incipient lenticular cataract, vision= 20-70. Treatment daily for five weeks with the galvanism and tincture of iodine and iron tonics. Vision at discharge and to this date O. D. not improved, O. S. 20-40.

Case 12.—John Bergderfer, æt. 67, Catawba Island, O., Dec. 15, 1890. O. D. hypermature cataract with fluid vitreous and perception of light. O. S. V.= 20-100. Incipient cataract following six months after a stroke on the eye. Treatment citrate of iron and quinine with pepsin and bismuth, and the usual application daily of galvanism and tincture of iodine. Discharged after five weeks treatment with vision O. S. 20-100. No relapse to this date.

During the past year I have treated four other cases of incipient cataract in the same way, with about the same results, but they are not described in detail because of the recent date of their treatment. My experience convinces me that in nearly every case of incipient cataract we can save to our patients for a few years at least, their existing amount of vision, which in many cases may be even more serviceable than that of an aphakous eye.

CAMPHOR.—Dr. Karl Rosaer, in *Zeitschrift f. Therapie*, recommends liquid parafine as a solvent for camphor for subcutaneous injection; on warming, a clear solution is obtained which will keep a long time.

THE NEGLECT OF MEDICAL EDUCATION IN THE UNIVERSITIES.

BY BAYARD HOLMES, B.S., M.D.,
PROFESSOR OF SURGICAL PATHOLOGY AND BACTERIOLOGY IN THE COLLEGE OF PHYSICIANS AND SURGEONS.

It is now the fashion for every medical college to have a "University connection." This is a condition, often, as we have reason to know, of the most distant and unstable character. In some cases it means that the medical school is advertised in the announcement of the university and helps to swell the number of university matriculates, but that it is autocratic and independent of the university in all its acts and the university is free from all financial responsibilty in the medical school. In other cases it means that the university is responsible for the housing of the medical department which it has farmed out to a few physicians. These men conduct the affairs of the institution as they see fit and, we regret to say, without regard to the interests of any but themselves. Some of these university medical schools still have seven or eight professors as they did fifteen years ago. The increase in medical lore and the improvement in methods of medical investigation have made no additions to their curriculum or to their faculty.

But it is not of the private universities that the profession has a right to complain. Under our existing laws and customs, what they have is theirs to do with as they please. With the State Universities it is different. They are the proper subjects of criticism. They have entered the field of medical education to teach and not to bolster up the acquaintance and reputation of any set of men. The State medical schools should then require of their students the very best preliminary education, the most extensive course of study, and the most rigid examination and clinical demonstration of fitness for graduation. It is notorious that the State University medical schools in order to encourage scholarship (?) ask no tuition fees, and yet it is equally notorious that students are not excluded from these schools for illiteracy. Therefore the "medics" in the large State universities are the most uncultured and uninfluential of the lot of students. Medicine is disgraced by the boisterous crowd, and anything like adequate teaching of such students is impossible. The course of study in those schools is not more extensive than in the best private schools. In no sense do they lead in education. Their degrading effect on medical education would be greater but for the fact that most of them are situated in small cities, and therefore they are rarely rivals of metropolitan schools.

The position of the medical department in the American university is unique. Medicine is the natural recipient of a large portion of the men who take the bachelors' degree in science. Medicine should have a larger portion of the Bachelors of Science than the law has of the Bachelors of Arts. *In looking* over the class statistics in the college magazines that lay on our table, we find that between thirty and forty per cent. of the June graduates are put down as prospective lawyers; the balance of eighty per cent. as prospective preachers; while only five per cent. are reckoned as prospective doctors. In the Law departments of our universities over half the matriculates are graduates in the arts, while the most fortuitously situated medical schools can not boast of more than ten or fifteen per cent. of students who have the bachelors' degree.

Of all the occupations of life, medicine is the most benevolent. In this respect it should be a rival of the ministry. It is the one occupation in which there is a life long pursuit of science. In this respect it should compete with the mechanical arts and engineering. It is the one occupation in which a man is free from the crushing influences of our modern growth of monopolies, and it is the only profession in which a man may expect to earn a living from the beginning. In these respects it has no rival. It is astonishing then that medicine receives so small a proportion of our college educated men.

We cannot attribute this neglect of medicine to its comparatively small financial rewards, because these rewards come soon and last to the end of the doctor's life. We cannot attribute it to the hard work and long hours, because the other professions are hardly less exacting. It cannot be because a larger proportion of men love the study of the humanities and literature and a smaller number the sciences, because the former are notably artificial. But we believe the cause is to be sought in the general neglect of the sciences by the universities, and the special neglect of that fruition of the sciences, medical science. The professors in the most celebrated, and we believe the most overrated university medical school in the country, not only receive a smaller salary than any other professors in that renowned faculty, but less than many of its tutors. Again, the professorships in this institution seem to be under a protective entail limiting appointments to certain families. In other branches of the same university no such systematic favoritism is manifested. This medical school, though most fortuitously situated, and though holding a very high, if not the highest, place in the esteem of the profession, does not attract any considerable percentage from the enormous classes that yearly graduate from the arts and science departments of the same university. That is to say, this great medical school is not looked upon with favor by students of the university. The scientific spirit does not so pervade the institution that the rapidly increasing students are attracted to medicine as a field of mental activity.

Undergraduates are led to the selection of post-graduate fields of study by fashion, by the influence of the undergraduate professors, and by distinction already attained by former aspirants. If there is no place in a medical school open to ability, original research and honest and successful work, the ambitious and high-minded student will select a department in which birth and marriage play a smaller part in the bestowal of professorships and honors.

To the profession at large, this strange condition of affairs in so many of our medical colleges is not more ridiculous than it is exasperating.

Again, the too "practical" character of medical teaching drives away real students and scholars. While in other branches of the university a constant effort is made by means of lectures, theses and honors, to increase that indefinite educational element which has been termed culture, these efforts are not apparent in the medical school. The medical school seems to be given over to the sordid clinician and the chemist, to the humdrum lecturer and the ranting specialists. Real culture is the quality which our medical schools most need.

The students in this department are in most institutions under different rules and regulations, both in regard to requirements and honors, from students even in the other professional schools.

It is unfortunate that we have so many medical schools, but more unfortunate that we have only one sort. The requirements of the oldest and we believe richest medical school in the United States now barely comes within the minimum requirements of the State Board of Health of Illinois, and not within the minimum of the Association of American Medical Colleges. The fees of this school also are as low as those of a provincial college.

The medical profession has abundant reason to complain of the stingy manner in which medical education has been conducted by the independent universities. It has still more reason to complain of the State universities. From these it ought to receive more. As long as the present industrial system prevails, the only hope is in the liberal endowment of one or two colleges. We have been waiting for Johns Hopkins for years. We have mourned the loss of a large slice of the endowment and the delay in utilizing the remainder. We have regretted the expenditure in monumental buildings of the resources which should have gone into endowment. But we still believe that the model college will be realized. We believe that the medical men of the country will advise their students to take the full science course, and then patronize the college that requires the most on entrance, and continues to require and give the most to the end of the course.

In conclusion, we would formulate the following propositions, which we believe can neither be denied nor refuted:

1. The universities, without exception, neglect their medical schools, farm them out or treat them on principles different from and inferior to those which are applied to their other departments.
2. The university medical schools compete with the poorest independent schools in their entrance examination, in their low fees, and in their short courses of study and low requirements, and thus do a great injustice to the reputation of medicine in the university.
3. The utilitarian atmosphere which pervades the medical departments of our universities, the nepotism by means of which the appointments in these schools are made, and the consequent poor pay which is given to the few teachers that are paid at all, turns away ambitious and highminded men from seeking a scholarly career in medicine.
4. In all of these directions, the State universities are most culpable.

A NEW METHOD OF OPERATING FOR TRICHIASIS, DISTICHIASIS AND ENTROPION OF UPPER LID.

Read in the Section of Ophthalmology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY EUGENE SMITH, M.D.,

PROFESSOR OF OPHTHALMOLOGY AND OTOLOGY IN DETROIT COLLEGE OF MEDICINE, OPHTHALMIC SURGEON TO ST. MARY'S HOSPITAL, SURGEON IN CHARGE OF ST. MARY'S FREE EYE AND EAR INFIRMARY, DETROIT, MICH.

In common with many ophthalmic surgeons I have been for many years seeking for an operation for trichiasis or distichiasis which shall offer the easiest method to the surgeon and the best result to the patient.

The Jarsche-Arlt operation and the Graefe modification of it, has for many years been considered by some as the best method of correcting the deformity, notwithstanding the facts that inflammation occasionally destroys the good effect intended, and the operation is particularly difficult when the canthi are the seat of abnormal cilia. Modifications have been offered by many operators, but most of them produce more or less cicatricial deformity of the lids. Most of us know by experience that in the transplantation of the cilia upwards (Jarsche-Arlt), it is difficult and sometimes impossible to separate all of the hair follicles from the tarsal cartilage in dividing the lid into two layers, as some may be rooted immediately *on* the cartilage or even *in* its most superficial layers, and if papillæ remain on the posterior lip, the cilia will grow again and they may not make their exit through the old canal, but often perforate the new cicatricial tissue and again appear in a faulty position causing a renewel of the ocular trouble. No degree of carefulness in operating will enable one to guard against it.

The operation to which I wish to ask your attention is one I have been making for the past five years in my private and hospital practice, which is applicable to all cases and which has, so far, given perfect satisfaction to myself and my patients. I have made the operation more than fifty times for complete and partial trichiasis. Its chief recommendations are its efficiency and ease of performance. It is made as follows: A Snellen's clamp is placed on the lid and an incision is made with a Beer's knife along the free border between the faulty and the normal cilia, somewhat as in the Jarsche-Arlt operation. The incision is carried well up to the hair follicles, two or three lines, which are plainly seen when the slight flow of blood has been removed with a sponge or pledget of absorbent cotton. If the wound does not gape, it does usually, the anterior lip is lifted with forceps, and all the hair follicles upon the cartilage are delicately touched with the fine point of the galvano-cautery or the Pacquelin cautery. Where a group of faulty cilia are attached to the anterior lip their follicles are also touched with the cautery and thus destroyed. The wound is then washed with a $\frac{1}{5000}$ solution of sublimate lotion, a pledget of cotton dipped in the same lotion is placed on the closed lid and held in place with a strip of adhesive plaster,not being removed for 24 hours, at which time the faulty cilia either drop out or are easily removed. The wound is usually found closed and healed by first intention. *The reaction is surprisingly slight. Only the region of the hair follicles* is touched with the cautery, and care must be taken not to destroy or obliterate the canals of the tarsal glands, thereby causing atrophy and contraction of the cartilage and tarsal tumors, but with proper care a successful result follows the operation though it may be necessary to repeat it partially if in an occasional case all of the faulty follicles have not been destroyed in the first operation.

In cases of partial trichiasis, the incision in the margin of the lid should simply extend a little beyond either extremity of the space occupied by the inverted hairs. The operation can be easily carried into the canthi, and does not produce any cicatricial deformity.

In mild entropion with slight incurvation of the cartilage I have several times made a *grooving* of the cartilage with the galvano-cautery, somewhat after the manner of the Streatfield operation, and in each instance with considerable success. I raise a flap of skin and muscle from the tarsal cartilage over the convex or clubbed portion and *groove* the cartilage by drawing the cautery along its entire length. I then return the flap to its place and hold it in situ with two or three points of suture. The operation is more simple than Streatfield's, as any one can see who has ever attempted to cut out a wedge shaped piece of the tarsal cartilage, *a la* Streatfield. If it is ever desirable to remove all of the eye-lashes to scalp the lid, as it were, it can be more easily accomplished with the actual cautery, and with less deformity or loss of tissue than by the old methods.

Discussion.

Dr. F. C. Hotz, Chicago:—I rise to refer to one remark the Doctor made, namely that all operations done for trichiasis leave disfiguring scars in the lids. I have tried, and as I believe succeeded, to improve the operation in trichiasis and one of my principal points has been to find an operation which will relieve the inversion of the eye lashes but also preventing disfiguring of the eye lid, a result which often followed these operations and especially the one to which reference has been made. The operation I have suggested has the advantage that cosmetically it leaves the lid in better condition than before, and the scar following the operation is put at such a place along the upper border of the lid that it is not perceptible, being hidden in the deep furrow caused by opening the lid. In my operation, we can therefore, not speak of any disfiguring scar.

As to the difficulty in dislodging all the eye lashes by splitting the lid and getting them all in the anterior flap, I must also disagree with the speaker. By making the incision far back, if necessary at the conjunctival line and by making it deep enough all the lashes can be dislodged. By splitting deeply and getting the wound to open up well by stitches and grafting in slender strip of skin, I think that you get as good results as you wish and reëstablish cosmetically the natural shape and form of the eye lid.

I do not quite understand the application of the cautery as spoken of by Dr. Smith. He spoke of treating the distorted and displaced eye lashes and leaving the normal eye lashes intact. That point I confess is not clear to me if he speaks of trichiasis. If we have the same conception of the condition spoken of as trichiasis, I think that there are no normally placed eye lashes because the border of the lid is so drawn down that all normally placed eye lashes are displaced. To destroy the abnormally placed lashes, it would be necessary to destroy them all; and in the case which has been exhibited, it looks to me as though all the eye lashes would come out.

Dr. G. C. Savage, Nashville, Tennessee:—For several years, I have done an operation for this condition. Part of the procedure is my own and I wish to briefly describe it and then you can judge whether or not it would be effective. At the first I commence by splitting the lid as Dr. Smith does then I took a double stitch which I shall describe later, so as to turn that portion of the lid out which contains the offending follicles. I found afterwards that the operation was better done by making Burow's incision. If the offending eye lashes exist throughout the lid, I make the incision from one end to the other. In addition to Burow's incision I make a cross incision at either end. These incisions involve the cartilage and everything to the skin. The stitch is all that I claim. The stitches are double. If I operate on the whole extent of the lid, after making the three incisions, I would take four stitches. I introduce the needle through the wound and bring it out in the skin just above the portion containing the hair follicles. I then pass over a portion of healthy skin and grasp another portion with the fixation forceps and transfix it with the needle. This is done from one extremity of the lid to the other before any knot is tied. The advantage which I claim is that, that portion of skin over which the thread is passed, by folding back will facilitate the turning out of that portion containing the hair follicles where the sutures are tied. The advantages are that we get wide gaping of the incision and elongation of the margins. The stitches are allowed to remain until the wedge shaped incision has had time to fill with plastic material. This is the easiest operation of any that I have performed for this condition. In my hands as well as in the hands of some others it has been very effective.

Dr. Eugene Smith, Detroit:—A word in regard to the remarks of Dr. Hotz. The operation of Dr. Hotz is apt to thicken the edge of the lid, which remains thickened and produces a certain degree of deformity which, however, is nothing in comparison with the irritation caused by the cilia. The Doctor speaks of inversion of the edge of the lid as trichiasis. I consider that entropion. I look upon trichiasis as that condition in which the edge of the lid is almost absolutely normal and we have the inverted eye lashes which spring from the normal border of the lid, the lashes being simply inverted. I also look upon other cases where the faulty lashes spring from the hair follicles and grow through the edge of the trichiasis and distichiasis. In a large majority of these cases, you can find a *space* between the inverted and normal cilia. My incision is made in this *space*. In the case shown the normal cilia were not touched with the cautery. Only the faulty follicles on the posterior lip were touched. The follicles on the anterior lip were not touched. When the dressing was removed this morning the faulty cilia came off with the dressing. Seldom do I have to remove them with cilia forceps. When this is necessary they come out without trouble. This case, gentleman, was operated npon but yesterday and in the presence of several members of this Section. The condition of the lid now, only 24 hours after the operation bespeaks more for the operation than can words of mine, as you see the case is well and no thickening or deformity exists.

BOOK REVIEWS.

The Chinese: Their Present and Future; Medical, Political, and Social. By Robert Coltman, Jr., M.D., Surgeon in Charge of the Presbyterian Hospital and Dispensary at Teng Chow Fu; Consulting Physician of the American Southern Baptist Mission Society; Examiner in Surgery and Diseases of the Eye for the Shantung Medical Class; Consulting Physician to the English Baptist Missions, etc. Illustrated with Fifteen Photo-Engravings of persons, places, and objects characteristic of China. In one handsome Royal Octavo volume. 220 pages. Extra Cloth, price, $1.75, net. Philadelphia: The F. A. Davis Co., Publishers, 1231 Filbert Street.

This little volume is filled with information that is both instructive and entertaining.

Syphilis in Ancient and Pre-historic Times. By Dr. F. Buret, Paris, France. Translated by A. H. Ohmann-Dumesnil, M.D. Philadelphia: F. A. Davis, Publisher.

This little volume is a veritable multum in parvo, embracing as it does a terse account of what has been said of this interesting subject by an almost interminable list of authors. The translator is one of the best known among American syphilographers and writers. The work is of intrinsic worth and should grace the shelves of every specialist and also of those who are interested in this field of study.

A Treatise on Diseases of the Lungs and Pleura. By the late Wilson Fox, M.D., F. R. S. Edited by Sidney Coupland, M.D., F. R. C. P. Philadelphia: P. Blakiston Son & Co., 1892.

This superb volume comprises the main literary work of one of England's best known physicians. While the subject matter is substantially the work of the distinguished author, its extent and much of its value is due to its editor.

The work is elaborate in setting forth in detail the sum of modern professional knowledge as it pertains to diseases affecting the lungs and their surrounding membrane, including diseases of the mediastinum.

Diseases of the Stomach. By Dr. C. A. Ewald, Professor of Medicine in the University of Berlin. Translated from the second German edition, by Moris Manges, A.M., M.D., with thirty illustrations. New York: D. Appleton & Co., 1892.

This work is written in the form of clinical lectures, which are intended for the use of general practitioners, and are based upon stenographic reports of remarks at the *Feriencurse fur praktische Aerzte*.

Lectures I and II, gives the author's method of examination, to determine the acidity and acids of the contents of the stomach, the digestion of albumen and starch, power of absorption and motility and the technique of the examination. Lectures III and IV, pertain to the stenoses and strictures of the orifices and to dilatation of the stomach. Lecture V, to cancer, and lecture VI, to ulcer. Lecture VII to inflammations. While three lectures are devoted to the neuroses. In lecture XII the author illustrates the practical value of modern chemical tests.

Book on the Physician Himself, and Things that Concern His Reputation and Success. By D. W. Cathell, M.D. New tenth Edition (Author's Last Revision). Thoroughly revised, enlarged, and rewritten. In one handsome Royal Octavo volume. 348 pages. Bound in Extra Cloth. Price, post-paid, $2.00, net. Philadelphia: The F. A. Davis Co., Publishers, 1231 Filbert Street.

This work by Dr. Cathell is one of the best known and popular books that has been offered to physicians during the past ten years.

NECROLOGY.

Dr. Benjamin W. McCready, Emeritus Professor of *Materia Medica* of Bellevue Hospital Medical College, died in New York City, on Wednesday the 10th inst. He was one of the senior graduates of old Barclay Street School, being of the class of 1835. He was over half a century in practice, leaving behind the record of a useful and honorable career. He was a good teacher, having filled a professorship of *Materia Medica* in the College of Pharmacy before 1860, at which time he united with Austin Flint, James R. Wood, Barker and others in founding the junior college at Bellevue. McCready was for many years a physician to Bellevue Hospital. During his prime there were few therapeutical chairs that drew better classes than his; he withdrew from the active duty of that chair in 1872 and was succeeded by Dr. William Hammond. He was a member of the Association in 1853, and about that time he was the editor of the *New York Journal of Pharmacy*. Dr. McCready retired from practice about seven years ago.

Dr. A. R. Brown Horner, Surgeon and Medical Director U. S. Navy, died August 8, 1892, at Warrenton, Va., age 88. Dr. Horner had served sixty-five years and six months in the navy and at the time of death was the oldest medical officer, with the relative rank of commodore in the navy. He was three times appointed by the Executive, Surgeon-in-Chief of various squadrons, for many years was appointed on the Naval Medical Boards, by seniority became Surgeon General of the Navy, was the author of "Cruise in the Mediterranean" of "Medical Topography of Brazil and Uruguay" and of "Naval Practice," the latter one of the first publications of the kind in this country. He was honorary member of the Philadelphia Medical Society and corresponding member of the National Institute at Washington. In private, social and public life Dr. Horner lived up to the standard of a noble manhood. He neither used stimulants nor tobacco. During his long, eventful life he displayed an unswerving loyalty to the Federal Union and *mens sana in corpore sano*. He gave testimony to his faith in the Gospel of our Lord Jesus Christ as the ground of his hope of salvation hereafter.

The American Medical Association.—The recent meeting at Detroit was probably one of the most important and best organized which the Association has ever held. Considerably over 1,000 medical men were present from all parts of the States, and not only the general meetings, where what may be called medical politics are for the most part discussed, but also the meetings of the various Sections, which occupied themselves with matters of purely professional or scientific interest, were conducted with vigor and energy which showed how intent the members were on the various matters which had to be discussed. There were in all twelve Sections, each with a chairman and secretary of its own, and although occasionally a meeting of one or more Sections had to be adjourned out of consideration for the absorbing interest which surrounded a few of the general meetings, the amount of work which was accomplished was by no means small.

The meeting was opened in the Detroit Opera House. The stage was beautifully decorated with flowers and palms, and the house was filled with an audience which was evidently keenly interested in all the proceedings. After Bishop Davies had offered prayer and General Alger had in a few appropriate words welcomed the Association to Detroit the President of the year, Dr. Marcy, of Boston, delivered an address, the subject being "Evolution in Medicine." This somewhat technical title scarcely conveys an adequate idea of the scope and bearing of the interesting address which was delivered. It was indeed more a description of the development of the American Medical Association and an indication in outline of the direction in which it should proceed in the future, with the view of drawing closer together the various associations and societies throughout the country and of strengthening the hands of those who are endeavoring to press on reforms in regard to medical matters. One subject was referred to in the address in which the orator evidently carried with him his entire audience—viz., the proposed establishment of a national board of health presided over by a secretary of public health who should be *ex officio* a member of the Presidential Council. Such a board would take cognizance of all that affects the public health of the community, especially of epidemic and infectious diseases, and there seemed to be a universal consensus of opinion that such a central board would, in coöperation with the State boards of health, be the means not only of enforcing sanitary regulations but also of educating the people to recognize their importance and desirability.—*London Lancet*, Aug. 6.

The following ordinance to prevent empiricism was recently enacted in the town of Effingham, in Illinois. Similar enactments in all village and town corporations would speedily locate all traveling charlatans. To locate such people, either drives them out of business or to the large cities.

An Ordinance to Prevent Empiricism.—Be it ordained by the City Council of the City of Effingham: That it shall be unlawful for any itinerant physician or itinerant vendor of drugs or medicines, to practice medicine in any of its branches, or sell or dispose of any drug, medicine, nostrum or ointment intended for the treatment of disease or injury, or to open an office for such purpose, or to announce to the public in any way an intention to practice medicine, or to sell or dispose of such drug, medicine, nostrum or ointment within the corporate limits of this city: Provided, That nothing in this ordinance shall be so construed as to prohibit any reputable physician or surgeon from any other place being called to see a particular case or family, or to do a particular operation in said city.

Any person violating this ordinance shall be subject to a penalty of not less than fifty ($50) dollars nor more than one hundred ($100) dollars.

Dated this second day of August, A. D. 1892.

Approved: J. B. Walker,
Mayor.

Attest: W. M. Stewart.

Dilute Hydrobromic Acid (15-20 minims) is prescribed by Dr. B. W. Richardson with digitalis infusion (½ ounce) for noises in the head, with throbbing.

THE
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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1271, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, AUGUST 27, 1892.

MEDICAL SIDE OF CAPITAL PUNISHMENT.

The recent great advance in scientific knowledge of criminals and criminality, has given new interest to the question of capital punishment. Practically the subject has passed from the realm of morals, sentiment and law into that of science. The old time arguments pro and con, are childish when viewed from the side of modern science. The physician who is not familiar with the practical teachings of the modern views of crime has much to learn. The question of capital punishment to-day, is simply that of brain, health and soundness of the criminal. To take the life of a diseased and brain degenerate man is no punishment, and no deterrent of crime. The original object of capital punishment is defeated in such instances. The theory of revenge and retaliation in the punishment of crime, has no support in modern civilization, the question of responsibility is a medical one, beyond the theory and morals. The best authorities assert from careful physical study of criminals, that they as a class, have abnormal brains and brain structure; also marked degenerate types of organism. Deviation from the normal, and reversions backward to some lower stage of savagery. They also possess conditions of instability of brain force, and predispositions to diseases and morbid impulses, with feeble or absent moral powers, to recognise the higher consciousness of right and wrong. Criminals are not only defects externally, but are neurotics and irregular in their mentality, and suffer from many and complex disorders. The abnormalities of organism and structure, are followed by abnormalities of acts, with feeble power to return to a normal type.

A clinical study of criminals reveals a great variety of constitutional effections unnoticed before. Hereditary predispositions, palsies, traumatisms, brain malformations, and a constant tendency to recede from a healthy normal type. All forms and degrees of insanity, and brain weakness are constantly present. In view of these and many other general facts, it is literally impossible to determine the degree of health and capacity to *act* sanely and normally in the criminal. A committee of the New York State Medical Society has made a very able report on this subject recently. This report is purely scientific, and confined entirely to the question of the possible brain health and the capacity of the criminal to have done otherwise. The conclusions of this very elaborate report indicate that criminals have perversion of judgment and will for which there are many causes. These causes are either congenital or acquired. When congenital they develop progressively *from disease or cerebral impairment*, and when acquired arrive from injury, disease and external favoring causes. Cerebral anomalies and central brain lesions, are not accessible to ordinary investigation. Degrees of dementia and various obscure forms of insanity may exist for a long time unnoticed, and the moral or higher brain centers exhibit the only evidence of departure from health. Irrespective of all theory and opinion, these and other facts are so numerous and well attested, proving the disease and unsoundness of the criminal, that his punishment by death for any crime is of doubtful value from every scientific point of view. "The committee with knowledge of the physiological and psychological facts, and the absolute impossibility of making a positively safe diagnosis in every case of alleged crime or the presumable disease or anomaly of the criminal, expresses its opposition to the perpetuation of capital punishment, and its hope that means will be found to protect the community by less uncertain and more humane methods." This aptly expresses the latest voice of science. Appeals to the physical facts in the history of criminals, will give far safer standards to judge from, than theory or sentiment. Physicians should always be found on the scientific side of such questions. If the criminal is always sick and diseased, this fact will come to surface despite all theory and opposition. Physicians of all others should be students and teachers of public opinion in this. Capital punishment, whether barbaric or human, is a question of facts, that are within the domain of every medical man, and must be finally settled along this line.

IMPURE AMERICAN BROMIDES.

HELBING'S *Pharmacological Record* for May has an important statement concerning the undue proportions of potassium chlorate that are found in the bromides of American makers. An examination made by HELBING and PASSMORE show that it is a serious matter to buy the potash salt, at the present time, without having it carefully analyzed as to the percentage of chlorides it may contain. The English drugs in their original packages, however, are pronounced as safe. Samples of those products did not yield higher than .13 per cent. of chlorate of potash, while four American samples carried from 4.52 to 5.96 per cent. The American Pharmacopœia permits of not more than three per cent., and the German about one per cent. The importance of purity in a drug of this nature is very great, and will receive the earnest heed of neurologists everywhere.

TREATMENT OF PNEUMONIA.

The treatment of pneumonia is ever a subject for consideration. In a recent clinical lecture, DR. ANDREW H. SMITH[1] has again given his views upon this subject. DR. SMITH's ideas upon the employment of arterial relaxants in the treatment of pneumonia, have been given to the profession before, but do not seem to have attracted as much attention as they really deserve.

It is generally understood that in pneumonia, the local pulmonary lesion, and the constitutional manifestations are not necessarily in harmony. That is, that while an extensive local trouble may occur concurrently with severe general symptoms, yet the reverse may obtain, and great lung consolidation not be accompanied by serious general symptoms, or there may even be slight local trouble, with the most dangerous general condition.

Each of these two general factors is to be considered in determining the plan of treatment to be employed in a given case of pneumonia.

Extensive local trouble in the lungs reacts mechanically upon the heart, but as DR. SMITH has pointed out, it is the right heart which is involved, *and not the left.*

As the pulmonary circulation through the involved lung becomes more and more retarded, the right heart makes more strenuous efforts to overcome the obstacle, the tension in the pulmonary artery becomes higher, and the second pulmonary sound at the base of the heart becomes more accentuated. As the right heart flags in its work, the veins become overfull, and cyanosis makes its appearance. The left heart acting synchronously with the right, but *without a great obstacle before it, adds to the difficulty* by keeping the systemic veins over full. Under these circumstances it becomes necessary to relieve the right heart as much as possible. It is impossible to remove the obstruction in front of it, but much may be done to relieve the pressure of blood behind it. By relaxing the arteries, more blood is retained *in them, and the venous pressure diminished.* The agents employed for relaxing the arteries are principally the nitrites, and of these, amyl nitrite, and nitroglycerine act most rapidly, and sodium nitrite, the most persistently. Aconite and veratrum have the same power of relaxing the arterial tension, as does also the liquor ammoniæ acetatis. For the relief of the cyanosis, the inhalation of oxygen gas acts promptly, and it is hard to believe after seeing its action, that its good effects are confined to oxidizing the blood. When grave constitutional symptoms are present, the left heart is also in danger, and must be held up, by stimulants. Of these alcohol and strychnia are probably the best, as they act without increasing the arterial tension. Digitalis should always be used with great caution, because it not only stimulates the heart directly, but also stimulates it through the contraction of the arterioles which it produces. Whenever used it should be guarded by the simultaneous use of an arterial relaxant, so that only its direct stimulation of the heart may appear. This is particularly true when the extent of lung tissue involved is great, and less so when the local lesion is slight. During the progress of the case, the condition of the left heart is watched at the pulse, while the condition of the right heart is determined by the character of the second pulmonary sound, by the cyanosis, and by the character of the respiration, in relation to the amount of lung consolidated.

CHOLERA.

The epidemic of Asiatic cholera in Russia continues its ravages in that country. More than 6,000 new cases have been reported almost every day for more than a month, with a mortality rate of nearly or more than half that number. Estimates based on official statistics indicate that more than 35,000 deaths from cholera have occurred in Russia during the present summer. The epidemic of choleriform diarrhœa in Paris has nearly disappeared. The disease was mainly in the suburbs, and almost wholly among the rag-pickers and those who were living under very bad hygienic conditions. The total number of deaths reported is about 400. The prevention of the further spread of the disease is due to the strict measures adopted by the government authorities.

In Berlin and other German cities and towns the most stringent sanitary measures have been adopted to prevent the disease obtaining a foothold in that country. The police authorities have issued notices which prohibit the importation into or passage through the lines of travel of all old clothes, bed or other linen, rags, etc., fruit, fresh vegetables, butter and cheese from Russia. The clothes and luggage of travelers are to be disinfected.

The German Government Department for medical matters has addressed circulars asking for the names of physicians, especially of those in posts, hospitals and universities, who are competent and ready to carry out bacteriological examinations in connection with cases of supposed cholera, and who are willing to assist the government medical officers in case cholera should break out and become epidemic.

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[1] International Medical Magazine, July, 1892.

We are pleased to notice that our own government through its Consular Officers is kept well informed of the progress of cholera in European and Asiatic countries and is alive to the necessities of a strict quarantine against all infectious material.

As we go to press the cable informs us of the spread of cholera to Havre. This important European seaport is in almost constant touch with this country through common commercial and other interests, and it will be a high tribute to the value of sanitary science if our quarantine officers are equal to the occasion and show the possibility of affording protection to our people. The lateness of the season is favorable, but it should not be forgotten that previous epidemics of this disease have made their first appearance in October and as late as December.

EDITORIAL NOTES.

Note.—The paper by Prof. H. J. Herrick, M.D., on the Relative Interdependence of Organs of the Body in Health and Disease, published on page 221 of our last issue was read before the Section on Medicine, and not by title as indicated in the heading. The author's initials are H. J., instead of J. B.

Prevention of Puerperal Sepsis, on page 205 of the issue of Aug. 13, should have been credited to the editorial department of the *Buffalo Med. Journal.*

Our August Vacation Time.—The editor of the *Maryland Medical Journal,* in considering the advisability of his taking a summer's outing, falls into a monologue like the Prince of Denmark, and murmurs: "To skip or not skip, that is the question. Whether 'tis better in town to suffer the heat and swelter of the month of August, or to take grip in hand and migrate to some mountain clime, or to some pebbled beach? To dive, to swim, to loaf, but in that loaf, what images of science come forth—the clustered rods of typhobacillus, lurking in myriads in the hotel well, borne on the seepage of some neighboring cesspool; the organisms that thrive in dysentery; the germs of common everyday sepsis, each form more toxic than the other. Coiled on the mountain lurks the dreaded rattler, with lethal hypodermic ready; or at the seaside, in those hired bathing garments hide the germs of grave infections—of eczema, chancroid and secondary—ready to fasten on the fretted skin."

These apparitions of uncertain ills puzzle the will, and make him rather bear the city trials he has known, than fly to country ones which mayhap are worse: Thus science doth make coward of the editor, and he grows sicklied o'er with the pale cast of doubt and excessive transpiration from the heat. The newly developed, almost virgin fields of North Carolina should be good for his complaint.

ILLINOIS STATE BOARD OF HEALTH.

ABSTRACT FROM THE MINUTES OF THE MEETING OF JULY 27, 1892.

1.—Colleges requiring four (4) or more years of study and four (4) or more terms of lectures as conditions of graduation:

Chicago Medical College, Medical School, Northwestern University, Chicago, Ill.
Harvard University Medical School, Boston, Mass.
Boston University School of Medicine, Boston, Mass.
Department of Medicine and Surgery, University of Michigan, Ann Arbor, Mich.
Homeopathic Medical College, University of Michigan, Ann Arbor, Mich.
Leonard Medical School, Raleigh, N. C.
McGill University, Faculty of Medicine, Montreal, Que.[1]
University of Toronto, Faculty of Medicine, Toronto, Ont.
Ecole de Medicine et de Chirurgie, Montreal, Que.
Trinity Medical College, Toronto, Ont.
Laval University, Medical Departments, Quebec and Montreal, Que.
Royal College of Physicians and Surgeons, Kingston, Ont.
Halifax Medical College, Halifax, N. S.
Dalhousie University, Faculty of Medicine, Halifax, N. S.
University of Bishop's College, Faculty of Medicine, Montreal, Que.
Medical Department of Western University, London, Ont.
Woman's Medical College, Toronto, Ont.
Women's Medical College, Kingston, Ont.
Manitoba Medical College, Winnipeg, Man.

2.—Colleges requiring four (4) or more years of study and three (3) terms of lectures as conditions of graduation:

California Medical College, San Francisco, Cal.
College of Medicine, University of Southern California, Los Angeles, Cal.
Rush Medical College, Chicago, Ill.
Hahnemann Medical College and Hospital, Chicago, Ill.
Bennett College of Eclectic Medicine and Surgery, Chicago, Ill.
Woman's Medical College, Chicago, Ill.
Chicago Homeopathic Medical College, Chicago, Ill.
College of Physicians and Surgeons, Chicago, Ill.
Medical College of Indiana, Indianapolis, Ind.
Central College of Physicians and Surgeons, Indianapolis, Ind.
Medical Department, State University of Iowa, Iowa City, Ia.
College of Physicians and Surgeons, Keokuk, Ia.
Iowa Eclectic Medical College, Des Moines, Ia.
Hospital College of Medicine, Louisville, Ky.
College of Medicine and Surgery, of the University of Minnesota, Minneapolis, Minn.
Homeopathic Medical College of Missouri, St. Louis, Mo.
American Medical College, St. Louis, Mo.
University Medical College, Kansas City, Mo.
Eclectic Medical College of the City of New York, New York, N. Y.
Medical College of Ohio, Cincinnati, O.
Eclectic Medical Institute, Cincinnati, O
Cincinnati College of Medicine and Surgery, Cincinnati, O
Miami Medical College, Cincinnati, O.
Women's Medical College, Cincinnati, O.
Medical Department Willamette University, Portland, Or.
University of the State of Oregon, Medical Department, Portland, Or.
Dartmouth Medical College, Hanover, N H.

Colleges requiring three (3) or more years of study and three (3) terms of lectures as conditions of graduation:

Cooper Medical College, San Francisco, Cal.
Medical Department, University of California, San Francisco, Cal.
Hahnemann Hospital College, San Francisco, Cal.
University of Denver, Medical Department, Denver, Col.
Medical Department. University of Colorado, Boulder, Col.
Gross Medical College, Denver, Col.
Yale University, Department of Medicine, New Haven, Conn.
National Medical College, Washington, D. C.
University of Georgetown, Medical Department, Washington, D. C.
Howard University, Medical Department, Washington, D. C.
Medical Department, National University, Washington, D. C.
Fort Wayne College of Medicine, Fort Wayne, Ind.
Iowa College of Physicians and Surgeons, Des Moines, Ia
Homeopathic Medical Department, State University of Iowa, Iowa City, Ia.
Medical School of Maine at Bowdoin, Brunswick, Me.
University of Maryland, School of Medicine, Baltimore, Md.

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[1] Canadian diplomas are subject to the resolutions of the State Board of Health of March 21, 1891.

College of Physicians and Surgeons, Baltimore, Md.
Baltimore Medical College, Baltimore, Md.
Women's Medical College, Baltimore, Md.
Detroit College of Medicine, Detroit, Mich.
Minneapolis College of Physicians and Surgeons, Minneapolis, Minn.
College of Homeopathic Medicine and Surgery, Minneapolis, Minn.
Missouri Medical College, St. Louis, Mo.
St. Louis Medical College, St. Louis, Mo.
Medical Department, University of Missouri, Columbia, Mo.
Kansas City Medical College, Kansas City, Mo.
St. Louis Hygienic College of Physicians and Surgeons, St. Louis, Mo.
Omaha Medical College, Omaha, Neb.
Medical Department, Cotner University, Lincoln, Neb.
College of Physicians and Surgeons in the City of New York, New York, N. Y.
Albany Medical College, Albany, N. Y.
University of the City of New York, Medical Department, New York, N. Y.
Medical Department of the University of Buffalo, Buffalo, N. Y.
Long Island College Hospital, Brooklyn, N. Y.
New York Homeopathic Medical College in New York City, New York, N. Y.
Bellevue Hospital Medical College, New York, N. Y.
New York Medical College and Hospital for Women, New York, N. Y.
Women's Medical College of the New York Infirmary, New York, N. Y.
College of Medicine of Syracuse University, Syracuse, N. Y.
Medical Department Niagara University, Buffalo, N. Y.
Western Reserve University, Medical Department, Cleveland, O.
Starling Medical College, Columbus, O.
Homeopathic Hospital Medical College, Cleveland, O.
Medical Department, University of Wooster, Cleveland, O.
Pulte Medical College, Cincinnati, O.
University of Pennsylvania, Department of Medicine, Philadelphia, Pa.
Jefferson Medical College, Philadelphia, Pa.
Hahnemann Medical College and Hospital, Philadelphia, Pa.
Women's Medical College of Pennsylvania, Philadelphia, Pa.
Medico-Chirurgical College, Philadelphia, Pa.
Western Pennsylvania Medical College, Pittsburgh, Pa.
Medical College of the State of South Carolina, Charleston, S. C.
Meharry Medical Department, Central Tennessee College, Nashville, Tenn.
Medical Department, University of Vermont, Burlington, Vt.

The following is a partial list of medical colleges the diplomas of which are required to be supplemented by examination:

Medical College of Alabama, Mobile, Ala.[2]
Medical Department Arkansas Industrial University, Little Rock, Ark.[3]
Medical College of Georgia, Augusta, Ga.[2]
Atlanta Medical College, Atlanta, Ga.[2,3]
Woman's Medical College of Georgia and Training School for Nurses, Atlanta, Ga. (First session 1889–1890.)
Southern Medical College, Atlanta, Ga.[2]
Physio-Medical College, Chicago, Ill. (First session 1891–92.)
Eclectic College of Physicians and Surgeons, Indianapolis, Ind. (First session 1890–91.)
Keokuk Medical College, Keokuk, Iowa. (First session 1890–91.)
Kansas Medical College, Topeka, Kan. (First session 1889–90.)
University of Louisville, Medical Department, Louisville, Ky.[3]
Kentucky School of Medicine, Louisville, Ky.[3]
Louisville Medical College, Louisville, Ky.[3]
Medical Department, Tulane University of Louisiana, New Orleans, La.[2,3]
Medical Department, New Orleans University, New Orleans, La. (First Session 1889–90.)
Baltimore University School of Medicine, Baltimore, Md.[3]
College of Physicians and Surgeons, Boston, Mass.[3]
Michigan College of Medicine and Surgery, Detroit, Mich. (First session 1888–89.)
St. Louis College of Physicians and Surgeons, St. Louis, Mo.[3]
Northwestern Medical College, St. Joseph, Mo.[3]
Ensworth Medical College, St. Joseph, Mo.[3]
Beaumont Hospital Medical College, St. Louis, Mo.[3]
Marion-Sims College of Medicine, St. Louis, Mo.[3] (First session 1890–91.)
Kansas City Homeopathic Medical College, Kansas City, Mo. (First session 1888–89.)
Northwestern Ohio Medical College, Toledo, O.[3]
Cleveland Medical College, Cleveland, O. (First session 1890–91.)
Medical Department, University of Nashville and Vanderbilt, Nashville, Tenn.[2,3]
Medical Department, University of Tennessee, Nashville, Tenn.[3]
Memphis Hospital Medical College, Memphis, Tenn.[2,3]
Chattanooga Medical College, Chattanooga, Tenn. (First session 1889–90.)
Tennessee Medical College, Knoxville, Tenn.[2,3] (First session 1890–91.)
Hannibal Medical College, Memphis, Tenn.[3] (First session 1889–90.)
Texas Medical College and Hospital, Galveston, Texas.[2] (First session 1888–89.)
Medical College of Virginia, Richmond, Va.[3]
University of Virginia, Medical Department, Charlotteville, Va.[3]

There are in addition to the foregoing a number of other institutions whose requirements as to periods of study and attendance upon lectures, facilities for practical anatomy and for hospital and clinical instruction are so inadequate as to preclude their graduates from any standing before the Board, and there are some half-dozen or more others which are under investigation by the Board.

REPORT OF THE COMMITTEE OF THE STATE BOARD OF HEALTH OF ILLINOIS ON MEDICAL EDUCATION AND MEDICAL COLLEGES.

Offices of the Board,
Springfield, Ill., July 27, 1892.

To the President:

Sir:—Your committee, appointed to report on the practical workings and results of the resolution of the Board, adopted July 8, 1887—by which it was required that colleges, to be held in good standing for the purposes of the Illinois Medical Practice Act should, after the sessions of 1890–91, require four years of professional study, including any time spent with a preceptor, and three regular terms of lectures, as conditions of graduation, and should otherwise conform to the schedule of minimum requirements theretofore required by the Board, begs leave to submit the following:

In the last report on medical education and medical colleges, 1891, by Dr. John H. Rauch, to the Illinois State Board of Health, there is given, on pages 170–2, a list of medical colleges in the United States and Canada then in operation. The total is 148, but of this number 4 do not grant degrees, 3 have suspended, and 4 are not recognized by the Board.

An analysis of the remaining 137 colleges given in Dr. Rauch's list, and which embraces, substantially, all the established medical institutions in this country, is here submitted.

There are 19 colleges which require four (4) or more years of study and four (4) or more terms of lectures as conditions of graduation; there are 27 which require four (4) or more years of study and three (3) or more terms of lectures as conditions of graduation; there are 55 which require three (3) or more years of study and three (3) terms of lectures as conditions of graduation; there are 16 which require only three (3) years of study and only two (2) terms of lectures as conditions of graduation; and 5 are silent as to number of years of study, and graduate on only two (2) terms of lectures.[4]

This showing, it is submitted, is a most encouraging one. Over one-third of the established medical institutions of the country now exact four (4) or more years of professional study and three (3) or more terms of lectures as conditions of graduation; 45 per cent. more require three (3) or more years of professional study and three (3) regular terms of lectures.

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[2] Requires no entrance examination.

[3] Graduates on two terms of lectures.

[4] This accounts for 122 of the 137. Of the remaining 15, 12 are thrown out of the analysis because, being of less than five years' existence, they cannot be said to have established a standing. They comprise four 4-year and 3-term schools; four 3-year and 3-term schools; three 3-year and 2-term schools; and one 2-term school. It will be seen, therefore, *that* including them would not affect the proportions as obtained in the 122 established medical colleges.

Two 4-year and 3-term colleges and one 3-year and 3-term college are also thrown out, because under investigation by the Board as to their standing.

That is to say, nearly eighty-three (83) per cent. have complied, substantially, with the resolution of the Illinois State Board of Health of July, 1887.

Of the remaining 17 per cent. all but two are Southern schools—the exceptions being the College of Physicians and Surgeons of Boston, Mass., and the Northwestern Medical College of Toledo, O.

In view of these results of the operation of the July, 1887, resolution, as shown by this analysis, it is hereby recommended that, in the discharge of the responsibility with which the Board is vested by the General Assembly—to determine the good standing of legally chartered medical institutions, the diplomas of which may be presented to the Board as the warrant for the State certificate which is "conclusive as to the right of the lawful holder of the same to practice medicine in this State"—the following rules be adopted:

Rule 1.—Any established, legally chartered medical institution shall be held to be in good standing, for the purposes of the Illinois Medical Practice Act, which conforms to the course and period of study, the number, character and length of lecture terms, the duration of attendance on hospital and clinical instruction, and the other requirements of a medical education which obtain as the practice of a majority of the established medical colleges of the United States and Canada.

Rule 2.—No medical college can be held to be in good standing until it has established its claim to such standing by an active existence of not less than five (5) years, and then only upon compliance, during such period, with the terms of Rule 1, and by its work and the character of its graduates as determined by the examination of the Board.

Rule 3.—Graduates of medical colleges which do not fully conform to the practice of the majority of established medical institutions in good standing may, in the discretion of the Board, obtain State certificates upon passing examinations in writing in the branches of the usual medical college course, to wit: anatomy, physiology, chemistry, materia medica and therapeutics, theory and practice of medicine, pathology, surgery, obstetrics and gynecology, hygiene and medical jurisprudence.

Graduates of medical schools of less than five (5) years' existence, but which conform to the practice of the majority of established medical institutions in good standing, may, in like manner and in the discretion of the Board, obtain State certificates upon passing examinations in the branches of the usual medical college course as above recited.

No fee shall be charged for the examinations provided for by this rule.

Rule 4.—Any medical institution which is not recognized by the American Medical College Association, or by the American Institute of Homœopathy, or by the National Eclectic Medical Association, or by the American Association of Physio-Medical Physicians and Surgeons, as the case may be, shall be declared and held to be not in good standing for the purposes of the Illinois Medical Practice Act.

Your committee would add that it believes the necessity and propriety of the above rules are so obvious that no argument is needed for their adoption.

Concerning Rule 3, however, it may be observed that its effect would be to avoid individual hardship in the case, for example, of a graduate of a college which had not yet established its good standing by the necessary period of active existence, or in the case of a graduate of an established college which had failed to conform fully to the requirements of the Board. Instead of punishing the individual graduate for the immaturity or the laches of his alma mater, he would be entitled to a State certificate on demonstrating his fitness to be entrusted with the "interests of the life and health of the citizens of the State" as a practitioner of medicine.

And this, it is conceived, is the primary and essential object of the Illinois Medical Practice Act.

All of which is respectfully submitted.

B. M. Griffith.
R. Ludlam.
A. L. Clark.
W. R. Mackenzie.
D. H. Williams.

SELECTIONS.

Heroes and Martyrs.—We deeply regret to have to announce the death of Dr. Tilden from typhoid fever, contracted, it is believed, from bacillary infection, arising in the course of a research which he was conducting on the bacillus of typhoid. Dr. Tilden was intending to bring some of the results of his pathological studies before the meeting of the British Medical Association now in progress at Nottingham. It will be remembered that Dr. Mahomed similarly fell a victim to his scientific and self-sacrificing ardor. Such incidents in the history of the devoted laborers in medical research have been only too sadly common of late. Three students of St. Thomas' have suffered the dangers which the modern heroes of the physiological and pathological laboratory have to face. One—Mr. Lucas—died from infection in studying puerperal septicæmia; another becoming infected with local tuberculosis, was saved by amputation of the finger, but not without serious constitutional injury. Dr. Spear, one of the ablest of the inspectors of the Local Government Board, died not long since from constitutional infection with anthrax, of which he was making a careful prophylactic study; and another inspector, Dr. Monckton Copeman, only the other day came nigh to a catastrophe from a similar cause. The silent heroism of the medical scientist who pursues knowledge amid much surrounding peril is often passed unnoticed, but is none the less worthy of honor and respect.—*Brit. Med. Journal.*

The Present Attitude of the Medical Profession in Regard to the Surgical Management of Spinal Injuries.—This question of the surgical treatment of those lesions of the medullary substance and the osseous structure of the spine, is one of enormous importance, and should be definitely settled by those whose practice, study and observation properly qualify them to speak.

Watson, at the Nashville meeting of the American Medical Association, presented an exhaustive and analytical monograph which has gone a great way to define the relation between physical traumatic lesions and subsequent pathological changes, as revealed through an extensive series of injuries inflicted on etherized dogs.

Manley, of New York, followed him with a series of thirty cases of serious spinal lesions of every degree of severity, reported and described before the New York Medical Association; besides, in another full and systematical monograph the following year, at the Washington meeting of the American Medical Association. The latter fully and unequivocally endorses the conclusion of Watson from his observations on the living subject, and concludes that Erichsen's "railway spine" is a purely mythical entity.

Let the contesting brethren test their mettle in this controversional warfare; but what we want is the "searchlight thrown on." The simple question is: In serious spinal injuries, which cause paralysis and lead to the suspicion of fracture or displacement, do modern surgical methods permit us to safely make an exploratory incision? In other words, make a simple, a compound fracture; remove the fragments if there are any, or expose the cord.

The profession is ominously silent on this question. In this immense country there must be many broken backs in the course of the year. But, we hear nothing from them except now and again when an odd one has been successfully treated by surgical intervention. What becomes of the rest?

Are the failures relegated to quiet oblivion, or are operators reluctant to increase their mortuary records?—*Times and Register.*

Poisoning by Ichthyol.—The increasing employment of ichthyol in the treatment of various conditions such as sprains, lymphatic enlargements, and certain diseases of the skin, renders a full acquaintance with its powers as a medicinal and toxic agent necessary on the part of the general practitioner and specialist. It is probable that there are few drugs which, applied externally, can exert so favorable and rapid an effect as ichthyol. Many physicians, who have never employed it, can scarcely be made to believe the rapid changes which take place in diseased tissues under its free and proper employment.

We have already pointed out elsewhere the singularly good results which follow its inunction about joints which are inflamed by gout and subacute rheumatism. In association with salicylates, there is certainly no application which gives as great relief to the patient as does ichthyol. That the drug is capable of producing poisonous symptoms seems to be proved by the report of an Italian physician, Dr. Bergerio, who has employed the drug as an intrauterine injection after curetting the uterus. Shortly after the injection the patient complained of a fishy taste in the mouth and of the odor of ichthyol. The pulse became exceedingly rapid, and symptoms of collapse came on with great rapidity. These symptoms, however, disappeared in about twelve hours. Naturally, Bergerio concluded that this case of intoxication was due to the absorption of the drug from the exposed surface of the uterus, and he reports that his colleague, Peroni. observed, in another case, vomiting, headache, convulsions, and diarrhœa after the employment of ichthyol in a patient who was suffering from prurigo.—*Therapeutic Gazette.*

Adulterated Iodoform Gauze.—According to the *Chemist and Druggist* for June 11, 1892, one of the German analytical laboratories has detected an adulterated iodoform gauze, which was labelled "iodoform gauze, thirty per cent." It contained eight per cent. of iodoform, and the color had been heightened by a nitrated derivative of phenol.

To detect this adulteration, the gauze should be plunged in water, when the water becomes of a yellow color. Pure iodoform gauze does not yield its color to water.

Treatment of Blenorrhagia with Permanganate of Potash. Prof. Reverdin (*Gaz. Hebdom. Scien. Med.*).—A solution is made of 1 to 5000—two grains to the pint—and, by means of a small catheter passed down to the bulb, the urethra is thoroughly irrigated with about a quart of it. This may be done with a syringe, but better by an elastic tube attached to a little cistern suspended above the patient's head. To avoid staining his linen, which may lead to disastrous revelations, the patient stands up and passes the penis through a hole in a waterproof apron tied round his waist. The injection should be used at the temperature of 100° F., and twice a day. No medicine is given, and a cure should be effected in from three days to a fortnight, generally in a week.

MISCELLANY.

The Medical Society of Virginia, will convene for the 23d annual session at Alleghany Springs, Montgomery Co., Va., September 13, 1892.

On Wednesday morning, September 14, at 10 o'clock, the Society will be called to order. Business of a general character will be in order until 11 o'clock, when the President, Dr. H. Gray Latham, of Lynchburg, will deliver the annual address of the President.

Papers will be:

Appendicitis, by Dr. Wm. Edward McGuire, Richmond, Va.

Laparotomy and the Good Accomplished by it in Gynecology, by Dr. R. S. Martin, Stuart, Va.

Some New Ideas that are Old, by Dr. S. W. Dickinson, Marion, Va.

Necessity of Prompt Action in Cases of Placenta Prævia, With Report of Cases, by Dr. L. H. Keller, Luray, Va.

Some Ocular Diseases in Children, by Dr. Phillip Taylor, Richmond, Va.

Mysteries of Medicine, by Dr. C. W. Gleaves, Wytheville, Va.

Injuries of the Knee; Their Treatment and Results, with Special Reference to the Prevention and Cure of Suppurative Action in and About the Joint, by Dr. M. W. O'Brien, Alexandria, Va.

In response to the postal issued during August, 1892, the following have responded:

The Causative Relations of Bacteria to Disease, by Dr. C. M. Blackford, Lynchburg, Va.

Common Sense in the Treatment of Discharge from the Ear, by Dr. Alexander Duane, No. 25 E. 31st St., New York, N. Y.

Some Uses of the Iodides, by Dr. L. G. Pedigo, Roanoke, Va.

Cataract, Dr. Joseph A. White, Richmond, Va.

Some Remarks on the Continued Administration of Digitalis, Illustrated by the Report of a Case, by Dr. F. M. Brooks, Fairfax Station, Va.

Also in response to invitations duly issued, the following invited guests have promised papers:

Uterine Hæmorrhage and Present Method of Treatment, by Dr. A. Vander Veer, Albany, N. Y.

Surgical Management of Fibroid Tumors of the Uterus, by Dr. Joseph Price, Philadelphia, Pa.

Modern Electrical Methods as a Substitute for Surgery in Certain Pelvic Affections, by Dr. G. Betton Massey, Philadelphia, Pa.

Sexual Hypochondriasis and Perversions of the Genesic Instinct, by Dr. Irving C. Rosse, Washington, D. C.

What Shall Be Done With the Imbecile, by Dr. Samuel J. Fort, Ellicott City, Md.

Hypnotism as a Therapeutic Agent, by Dr. Wm. Lee Howard, Baltimore, Md.

The Twentieth Annual Meeting of the American Public Health Association will be held at the City of Mexico, Mexico, November 29, 30, and December 1 and 2, 1892. The Mexican Government has interested itself in the work, thereby assuring the success of the meeting. All the details are in the hands of Federal officers of the Republic of Mexico. The General Government has requested every State to send delegates. Invitations have also been extended to Central and South America. The session will continue four days, and owing to the expected large number of papers the Association will probably, for the first time, do its work in Sections. Prominent sanitarians and scientists from the United States, Canada, Mexico, and the Central and South American Republics will take an active part in the meeting.

The American Association of Obstetricians and Gynecologists will hold its fifth annual meeting at the Lindell Hotel. St. Louis, Tuesday, Wednesday and Thursday, September 20, 21 and 22, 1892. The President, Dr. A. Vander Veer, of Albany, N. Y., wishes it understood that all members of the medical profession interested in the subjects discussed, or who are friends of the Association, even though not especially interested in its branch of work, are most cordially invited to attend the several sessions.

The Lindell Hotel will be the headquarters of the Association during the meeting, and has a convention hall which will provide ample accommodation for its sessions.

By order of the Executive Council.

William Warren Potter, Sec'y.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from August 13, 1892, to August 19, 1892.

Capt. Adrian S. Polhemus, Asst. Surgeon U. S. A., is granted leave of absence for one month, to take effect about September 1, 1892.

Capt. Marcus E. Taylor, Asst. Surgeon U. S. A., leave of absence granted on surgeon's certificate of disability is extended four months on surgeon's certificate of disability.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending August 20, 1892.

P. A. Surgeon Richard Ashbridge, detached from Navy Yard, New York, and wait orders.

The Journal of the
American Medical Association

Vol. XIX. CHICAGO, SEPTEMBER 3, 1892. No. 10.

ORIGINAL ARTICLES.

METHOD AND RESULTS OF SIMPLE EXTRACTION OF CATARACTS.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, June, 1892.

BY H. KNAPP, M.D.,
OF NEW YORK.

Gentlemen:—When your President honored me with an invitation to this meeting and to read a paper, I thought that a description of simple extraction and its results, good and bad, might perhaps be more acceptable to the Society than any other subject I could have chosen.

I shall confine my remarks to the method practiced, and the results obtained, by myself during the last six years, *i. e.*, since I adopted simple extraction as the general operation. My views and rules are based on the experience gained by 623 simple extractions, intercurrent with which 60 combined extractions (about 10 per cent.) were made. No cases are omitted except such traumatic and complicated cataracts in which the cataract was the minor evil, for instance partial detachment of the retina complicated with cataract, and the like.

The *method of operating* such as I practice it, though scarcely offering anything absolutely new, differs in many important details and as a whole, both in principle and execution, materially from all others.

THE PREPARATION OF THE PATIENT FOR THE OPERATION.

The patient should be free from any acute disease, for instance bronchitis, exacerbations of albuminuria or diabetes, rheumatism and the like. His conjunctiva must be reasonably free from pathogenic germs. Dacryocysto-blenorrhœa and chronic purulent conjunctivitis absolutely counterindicate the operation. In dacryocysto-blenorrhœa the lachrymal sac should be largely split and rendered aseptic, and if this be impossible, obliterated before the operation is undertaken. Chronic purulent conjunctivitis has to be completely cured with nitrate of silver and other remedies, even if it takes six months or a year, before an operation of extraction is justifiable.

Preliminary ripening operations are, in my opinion, almost always superfluous. I prefer the risk of extracting an unripe cataract to that of any ripening method with which I have become acquainted. The leaving of remnants behind has, in the manner in which I operate, very little to signify. Locked up in the capsule they produce no iritis, and can easily and successfully be dealt with by the secondary division of the capsule.

I avoid operating on *cataracts swollen by imbibition*. They render the section difficult and rarely come out cleanly, whereas the immature cataracts, known under the name of nuclear sclerosis, if the anterior chamber is deep, mostly—not always—come out entire.

The patient is placed on an operating chair, opposite a window, or in cloudy weather, near an Argand burner whose light is concentrated on the patient's eye with a hand magnifier. The instruments are carefully cleansed with corrosive sublimate solution 1:5,000, then held in boiling water for a short time, immediately before being used.

The eye is anæsthetized by three instillations of a 4 per cent. solution of cocaine, fifteen, ten and five minutes before the operation. The lids and surroundings are carefully washed with soap, then with corrosive sublimate, with which also the inner surface of the upper lid is washed by means of a pledget of absorbent cotton. From the first instillation of cocaine until the commencement of the operation the eye is kept closed. The patient is subjected to no preparatory treatment, except a bath and thorough cleansing of his face and head. Each patient is examined when or before he enters the hospital, whether his internal organs are healthy, in particular his nerve centers, lungs, heart, digestive and urinary organs.

The operator stands behind the patient's head, operates on the right eye with his right hand (upper section always), on the left eye with his left hand. The lids are kept apart by a wire speculum. I prefer the Moorfield's speculum, or one which Tiemann lately made for me, both being modifications of the large Graefe speculum, preventing the ends of the branches from pressing on the eyeball by its own weight, the long curved parts of the branches hanging down and resting upon the temple.

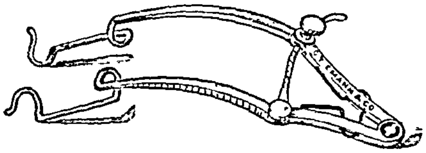

Figure 1.

The eye is steadied by the operator, who implants the teeth of a fixing forceps with his free hand into the conjunctival and episcleral tissue immediately below the lower edge of the cornea. When the speculum is applied, and before the eyeball is steadied, a drop or two of a 1:5,000 solution of mercuric bichloride is let fall on the eyeball.

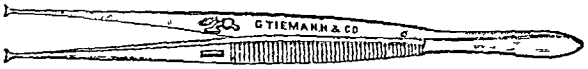

Figure 2.

EXECUTION OF THE OPERATION.

The *most important step of the whole operation is the corneal section.* For full-sized cataracts it comprises exactly the upper half of the cornea, for smaller, Morgagnian, and soft cataracts somewhat less. A perfect section passes in its whole extent exactly through the transparent margin of the cornea, the knife (see Figure 3) remaining in the same plane throughout, particular care being taken that in completing the section the blade of the knife is neither turned forward nor backward. In many cases a small, central conjunctival flap is formed which, if anything, is an advantage.

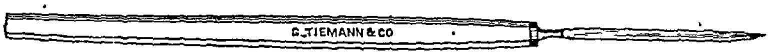

Figure 3.

This section is distinguished by its accurate and firm closure. It does not favor prolapse of the iris as the peripheric section does, nor does it lead to slow healing, secondary infection, and adhesions or incarcerations of the iris, as the more central flap often does. By cutting the lamellæ of the cornea *obliquely the contents of the eyeball*, by pressing the posterior lip of the wound toward the anterior, at once seal the section, so that the patient can move, open and shut the eye without disturbing the wound.

I open the capsule by passing the delicate sharp lance of the *cystotome* behind the iris from the nasal to the temporal side, thus incising the capsule near its periphery, parallel to the corneal section. This mode of cystotomy leaves the centre of the capsule unbroken and prevents the adhesions resulting from the contact of a torn and bruised pupillary edge of the iris with shreds of capsule and remnants of lens. The expulsion of the cataract and the clearing of the pupillary field can be done through the peripheric opening of the capsule as well as through the central.

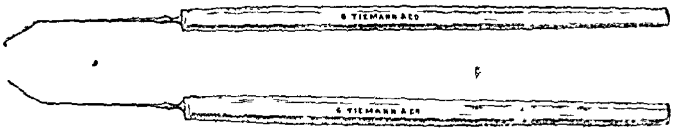

Figure 4.

I confine the removal of a piece of the anterior capsule to the thickened central portions of hypermature cataracts. I again and again have tried to remove the anterior capsule with forceps, a procedure that has become rather popular in Europe and has some warm advocates also in this country, but I have not found it so advantageous as to adopt it for all cases. It may be possible to *remove* a piece of capsule, not merely to *lacerate* it, and in this way to obtain a clearer pupil than by the extensive laceration of the capsule, but the result, as far as I have experience, will be simple posterior synechiæ in many cases and plastic iritis with its consequences in some, and the posterior capsule, to which the remnants of the anterior are agglutinated, mostly dots and wrinkles in the course of months and years, with corresponding falling off of sight.

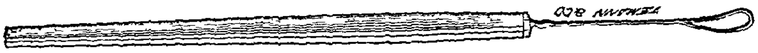

Figure 7.

Among the *accidents of the extraction of the anterior capsule* I may mention that in some cases when the capsule is tough the piece torn out is not limited to the pupillary space but extends to the equator of the lens, in others the whole crystalline body is drawn out. In both events the vitreous chamber is opened, a lesion which extends the wound and favors the occurrence of prolapse of the iris.

Of the many modifications of the original Liebreich or Mathieu forceps, the essential feature of which consists in the position of the teeth on the surface and not on the tip of the branches, I prefer the one Tiemann made for me and which I described two years ago (*Arch. Ophthalmology,* 1890, p. 288). When the instrument is closed, the teeth are hidden and the instrument is smooth all around. In this way the branches are introduced into the eye without scraping at the iris or raising the cornea perceptibly. When the branches separate, the teeth on the lower side project, and when pressed again together grasp so much of the anterior capsule as is desired. The forceps close only at the end, between the teeth, so that the iris is not included. Dr. Eugene Smith has so modified this instrument, that the tooth bearing ends are sunk slightly below the straight prolongation of the branches, thus dipping readily into the pupillary space. The instrument is well devised but a trifle bulky, and is not so readily introduced as the one spoken of before. I have tried it once only.

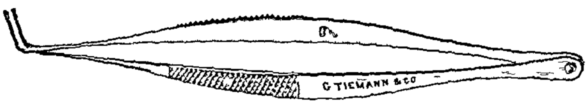

Figure 5.

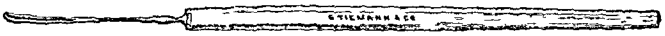

Figure 6.

The *expulsion of the lens* is effected by pressing the lower part of the cornea, with a Daviel's spoon, directly toward the centre of the globe. When the lens presents in the gaping section its exit is aided and followed up by slight strokes with the spoon on the outer surface of the cornea, so as to expel the lens, together with its cortex, as a whole. Should the pupil not readily expand, the rigid sphincter portion is drawn backward with the wire loop which is held in the other hand of the operator to aid in the expulsion of the lens. Should the section prove *too small* it is enlarged at one end with a pair of strabismus scissors, which also serve for cutting the iris in iridectomy, just as the capsule forceps serves in grasping and drawing out the iris for the same purpose. In the majority of cases the cystotomy and expulsion of the lens can be done *without* keeping the eye steadied with the fixing forceps. In restless people and pro-

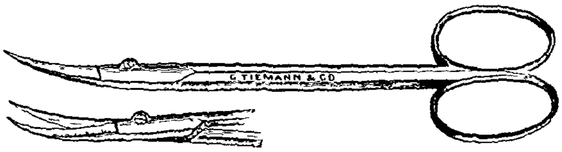

Figure 8.

lapse of vitreous I remove not only the fixing forceps but also the speculum immediately after the corneal section, and expel the lens by external pressure with the lids. I scarcely ever have to resort to the wire loop or any other traction instrument to get the lens out.

The *clearing of the pupil* is effected almost exclusively by pressing with the edge of the lower lid on the cornea. The remnants are wiped away with a well sterilized highly polished curette; neither the edge of the upper lid nor that of the lower is allowed to get in contact with the wound. The so-called milking manœuvre, by which the remnants were formerly pressed into the wound and *wiped out of it with the edge of the upper lid is highly reprehensible*, this procedure being as nearly a direct inoculation of germs as is possible. Equally reprehensible is it to introduce a curette or spoon into the anterior chamber to scoop remnants out immediately after such instrument has been passed over the cornea to expel the lens. There are germs on the cornea and conjunctiva even after the most careful disinfection. They are taken up by the spoon and carried into the anterior chamber. No instrument that enters the eye should have touched any living tissue, including the fingers of the operator, the skin of the lids or the conjunctiva of the patient.

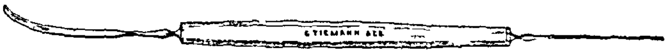

Figure 9.

During the operation I repeatedly let some drops of a 1-10,000 solution of corrosive sublimate fall on the wound and its surroundings, and when the operation is completed I smooth out the conjunctival flap, if there be any, introducing the end of a polished grooved spatula (*see Fig. 6*), previously moistened with the above sublimate solution into the anterior chamber and passing it through the wound from one end to the other, stroking from within outward, in order to remove particles of lens, redress a curved-in flap, and carefully adjust the edges of the wound.

This is, however, not done before *the iris has spontaneously or artificially recovered its natural position.* Should the corneal section be too peripheric, the best thing is to make a small iridectomy at once, for peripheric (Graefe's) sections commonly lead to large and harmful prolapses. If the iris does not spontaneously resume its position, frequently it does so when the lower part of the cornea is pressed upon with the edge of the lid. This paradoxical phenomenon may thus be explained. The iris being pinched in the tightly closing wound, pressure on the lower part of the cornea raises the flap and disengages the iris which then, by its natural elasticity and contraction of the sphincter pupillæ, can resume its natural position. If this encheiresis fail, the iris should be pushed back with a spatula into the anterior chamber. When the periphery of the iris remains folded in the sinus of the anterior chamber, it is smoothened out with the olive tipped point of a probe (see Fig. 9) introduced into the iris angle, behind the opaque corneal margin.

Formerly I washed the anterior chamber out with a solution of biniodide of mercury or boracic acid, but gradually this procedure has fallen into desuetude without appreciable influence on the results. I can say the same of instillations or eserine or pilocarpine after the operation. *When the operation is finished*, and the patient can open and shut his eyes without disturbing the flap on the iris, I drop a few drops of 1-10,000 bichloride of mercury solution on the wound and into the conjunctival sac and *let him go to bed without any bandage*, holding his eyes open or shut at his pleasure. The nurses help to undress, he lies down and closes his eyes. In from 5 to 20 minutes I inspect the eye again, and if everything is all right I bandage it. The *dressing* consists of a patch of moistened corrosive sublimate gauze, and a pad of moistened absorbent cotton fastened with two strips of isinglass plaster. The non-operated eye is covered the same way for a day or two. In nervous, old, or timid people the good eye is barely covered by a patch of gauze, fastened over the brow by a strip of plaster. The patient is instructed to keep both eyes gently closed and use the good eye only for eating and calls of nature. The first day the greatest possible rest is recommended. From the second day old people may sit up a part of the day. Since September 1891, I have followed this practice of letting the patients go to bed with their eyes unbandaged in 125 cases. In one of them I found the pupil displaced. I stroked the iris back, but there was a prolapse of iris when the eye was opened on the fourth day. In two of them I found an iris prolapse which I cut at once and obtained a smooth healing. Having in this way satisfied myself that in the other cases, the patients had stood the transportation from the chair to the bed and the undressing without a tendency to prolapse, was less in dread of this event, yet it occurred in a few instances, mostly by some accident.

Ordinarily there is pain for 5 or 6 hours after the operation, then the eye is and remains quiet. If after hours or days of freedom from irritation the patient, by an injury, a fit of coughing, or other more or less violent exercise, or without any assignable cause, feels a sudden sharp pain in the eye which gradually dies out in an hour, then in all probability a prolapse of iris has occurred. If I am informed of it within several hours, I open the eye, and in case the supposition prove true. I cut the prolapse, reducing the edges of the iris, if there be no irritation, *i.e.*. the prolapse is simply mechanical. If I notice the prolapse later, on the third or fourth day, I leave it untouched. Some of the small ones disappear, others skin over and produce no irritation, others become larger, constricted at their base or cystoid. I leave all these until the irritation has disappeared, and then cut them off. This operation, when performed after the eye has become white, is nothing more than the amputation of a small staphyloma and is usually followed by a smooth and permanent recovery.

For a time I wanted to *test the practicability of dealing with the iris-prolapse, under all conditions, as soon as it came to my notice.* The majority of cases did well, but there were three most unfortunate ones, the only failures I have had from iris prolapse whether operated on or left alone. Those three cases were one loss by suppuration, and two losses by irido-cyclitis chronica, both followed by sympathetic ophthalmia, so that both eyes became blind.

The first (extraction, with removal of a portion of anterior capsule), a man of 76 years, had a prolapse on the fourth day, when the eye was opened for the first time. It was excised the whole length of the wound. The next day no reaction, but on the temporal side there was a small angular incarceration, with a small bead of vitreous presenting.

Six days later the incarcerated portion had become bulging and was abscised. Infiltration of the wound developing into panophthalmitis followed. The patient had chronic conjunctivitis.

The second had a large prolapse cut on the fourth day, as soon as it was noticed. Edges reduced. Clean iridectomy, no irritation the following day. In the next night he struck his eye, causing some incarceration. Slow irido-cyclitis developed, followed in third month by iritis in the other eye. Both eyes were lost. Patient suffered intensely from rheumatism, and his eyes have given him a great deal of pain for a year after the operation.

The third case was a complicated (cholesterinic) cataract in a man of 71. Extraction with a portion of anterior capsule. On fourth day small prolapse noticed in outer corner; abscised 20 days later. Slow irido-cyclitis. Strings of cholesterine in vitreous adherent to scar. Fifty-four days after extraction the first circumcorneal injection noticed in other eye. In six months closure of both pupils. S=1-00.

These excessively sad cases are depressing in the highest degree. Their disheartening effect is counterbalanced only by the overwhelming number of good results.

The patients are usually discharged at the end of the second week. By this time the irritation has usually disappeared. The pupil almost always is free from adhesions, but sometimes more or less obstructed by remnants of lens. The capsule stretching across it may be smooth, dotted or streaked. The average visual acuteness in the third week is $\frac{20}{70}$. For the next two or three months the vision frequently becomes a little sharper, but then it gradually and steadily declines, so that S. as high as $\frac{20}{40}$ or $\frac{20}{30}$ in the sixth week may be reduced to $\frac{20}{200}$ and even $\frac{10}{200}$, without any subsequent inflammation, but simply by dotting, thickening and wrinkling of the capsule. This course has been the rule, not only in my own operations, but also in those of other operators, so far as their patients have come to my notice.

Excepted from this rule are: 1. Those cases in which the lens has been removed in its capsule. 2. Those in which secondary capsulotomy has been made. 3. A moderate number of those in which a part of the anterior capsule has been removed. 4. A small number of those in which the center of the anterior capsule has been extensively lacerated during the extraction. Having watched these results in hundreds of cases, I have made for the majority of cases the *early secondary discission of the capsule an integral step, the final act of the operation.* Experience has taught me that the easiest and neatest performance, the smoothest recovery and the best permanent visual results may be expected, 1. If the pupillary area is free from products of inflammation. 2. If the secondary changes in the capsule are not too old. 3. If these changes have not yet begun, *i. e.*, during the first weeks or months after the extraction. For years I have practiced the early secondary discission of the capsule as a rule. The results have been so satisfactory that I continue the operation without any material change.

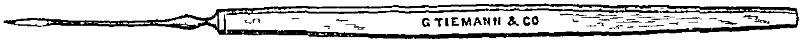

Figure 10.

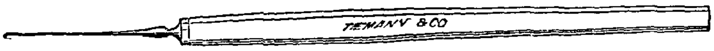

Figure 11.

The *secondary discission is made with a knife-needle*, the stem of which is so proportioned to the size of the little knife that it stops the opening, admits of passing the needle in different directions through the anterior chamber without letting aqueous humor escape. The operation can be done only under artificial focal illumination.

The needle is commonly introduced at the temporal side of the cornea 2 or 3 mm. from the margin, then its point transfixes the capsule at the inner margin of the dilated pupil. The capsule is first cut horizontally across. Then the needle is passed in front of the lower segment of the capsule, transfixes it near the lower margin of the pupil and slits it by an upward incision. Then the needle is passed before the upper segment of the capsule, which is transfixed at the upper pupillary margin and cut by a downward incision. This is the typical form of secondary capsulotomy, and gives a large and free pupil. Many modifications of this type are needed, for the manner of splitting must be suited to the peculiarities of the case. Each case is a study for itself. We must select the thinnest places, those that offer the least resistance, for the splitting, under all conditions avoid dragging fibrous bands to and fro. A T-shaped incision answers the purpose frequently, a curved incision, passing around a dense part, is often sufficient, but a linear straight incision commonly closes again. We should not thrust the little knife more deeply into the vitreous than is necessary to make clean and sufficiently extensive cuts. Avoid deep ploughing of the vitreous, for there is a dark side in this operation, the importance of which I have learned of late only. I mean the *occurrence of glaucoma after secondary discission of the capsule.* In the April number of the *Archives of Ophthalmology* of 1892, p. 293, I published ten cases from my own practice. Sometimes the first day after the discission, sometimes a few days later, acute glaucoma breaks out, the eye grows painful, red, hard, and rapidly loses sight. Myotics relieve the symptoms, but control only mild forms of the disease. The others have all been cured by a prompt iridectomy. In all, the anterior chamber was filled with vitreous, and this seems to be the permanent condition when the opening in the capsule does not close again or some thin hyaline membrane is formed.

In evidence of this I may mention the case of a gentleman who had been operated on twenty years ago, by repeated discissions of a congenital cataract by the late Dr. C. R. Agnew. In one eye detachment of the retina had followed, in the other there was a round black pupil, increase of tension, glaucomatous excavation, gradual impairment of sight, contraction of the naso-frontal part of the visual field, and some floating opacities of the vitreous. S. 20-50. In this condition he was sent to me by a colleague who had just received and read the above publication. I made an iridectomy with a lance-shaped knife. Immediately after the corneal section healthy vitreous escaped, through which I introduced Tyrell's blunt hook, drew the iris out and cut it. Finding that only the inner half of the iris had been exsected, I at once introduced the hook again, drew the outer half out and cut it close to the sclerotic. Recovery prompt and good.

This has also been the method in other cases, with the difference that our introduction of the hook brought the iris out to the periphery. To try to grasp the iris in aphakial eyes with a pair of forceps is commonly unsuccessful. The iris recedes at the first pressure.

Messrs. Geo. Tiemann & Co., New York, have put all the instruments I use for primary and secondary cataract in a neat little case, which is very handy.

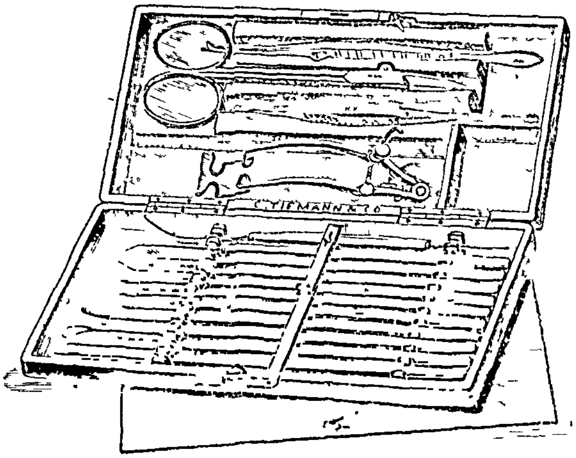

Figure 12.

STATISTICS.

I have published detailed accounts of the first 300 cases of simple extraction. (See *Arch. of Ophth.*, xvii, p. 91; xviii, p. 1; xix, p. 280.) The results were unusually satisfactory, viz.: good in 94⅓ per cent.; moderate in 4⅔ per cent.; failure in 1 per cent. I desire to mention that the unpromising cases were not related to the combined operation, but that the iridectomy was made only for special indications in which a manifest tendency to prolapse (on account of conditions lying in the eye, or created by the operation, too peripheric section, and the like) was the most frequent. Among the intercurrent 37 combined operations, *i. e.*, 11 per cent. of the whole number, there was no failure. Doubts have been expressed as to the reliability of such statistics, which means that the veracity or the sober judgment of the author is put in question. If we give the reader the data to verify our statistics, he may come forward and show our mistakes, or if he thinks our conclusions are too rosy, let him frankly utter his belief that we have been too enthusiastic. In my reports, as well as in those of several institutions, for instance, the New York Eye and Ear Infirmary, the Massachusetts Charitable Eye and Ear Infirmary, the Birmingham and Manchester Ophthalmic Hospitals, the cases are reported in tabular arrangement, with name and address of the patients. If in such publications no case is omitted, for what further evidence do the doubters ask?

We all know the fallacy of statistics unless the numbers are so great as to exclude the important element of chance. In presenting to you the results of the last 346 extractions, you will find that they have been less favorable than the first series of 327. Taking the two series together, we shall arrive nearer to the truth than by considering either alone.

A. UNCOMPLICATED CATARACTS, 301. LAST SERIES, 346 CASES.

Operated according to the simple method as above detailed.—Total, 257 cases: result good 227; moderate 28; failure 2; prolapse of iris 19. Secondary discission made in 163.

Simple extraction with removal of anterior capsule.—Total,19. Good 13; moderate 5; failure 1. Discission 5; prolapse of iris 3.

Combined extraction.—Total 23. Good 18; moderate 4; failure 1. Discission 16; incarceration of iris 1.

After preliminary iridectomy.—Total 2. Good 2; discission 1.

B. COMPLICATED CATARACTS, 45.

Simple extraction. Total 33. Good 23; moderate 4; failure 6. Included in these figures are two temporarily good eyes, healing and vision good. Detachment of retina in old highly myopic eyes, occurring months after the operation. Discission 6; prolapse of iris 1.

Combined extraction.—Total 10. Good 8; moderate 1; failure 1. Discission 5.

After preliminary iridectomy.—Total 2; moderate 2.

Suppressing the decimals we obtain from the above (241 good, 44 moderate results and 11 failures);

84 per cent. good results; 13 per cent. moderate results,and 3 per cent. of failure.

Out of the 37 extractions with iridectomy, 2 were failures. 37 is too small a number to draw comparisons from. If we add the rate of success in the first 300 cases of simple extraction to these here reported we obtain: 89 per cent. good; 9 per cent. moderate results and 2 per cent. of failure. This outcome is still very satisfactory, showing that in 683 successive cases of cataract (the complicated included) in which the combined operation was performed in only 10 per cent. no more than 2 per cent. of failure had to be recorded.

In conclusion, Mr. President, let me say that in cultivating the operations for cataract *I have endeavored in the first place to operate as safely as possible, and in the second place to obtain the greatest acuteness of vision compatible with the safest method of operation.*

Discussion.

Dr. Julian J. Chisolm, Baltimore:—We are so accustomed, and I think properly, to look to Dr. Knapp for advice, that we always note his suggestions and frequently act upon them. I think that the profession as well as the public who are interested factors in blindness, are to be congratulated on the decided changes, which, according to Dr. Knapp's remarks, he has made in the after treatment of cataract cases. He now allows his patients to get up and walk to their beds with the eyes unbandaged. That seems to be a marked change from his former practice. He also releases the eye not operated upon on the second day which is an immense change from the former eight days of bandaging. He also covers the eye much more lightly. This is also a great advantage. I think that the profession in later years has found that excessive restraint is not an essential part of a successful cataract treatment, and that we may allow our patients a great deal more latitude in movement than formerly. He says that it is essential to keep the patients at rest for twenty-four hours, but that after the first day has passed it is not so important, and that he then allows the use of the second eye for certain purposes. Dr. Knapp notes nineteen prolapses in his last series. Before leaving Baltimore, I had occasion to look over my records for the last year as regards the number of cases of prolapse. In my patients, the eye operated upon is closed by adhesive strap or bandage while on the table and the patient is then allowed to walk to his bed with the good eye, if he has one. This eye is never bandaged. While it may be the patient's pleasure to remain quiet, they have no occasion to go to bed unless they desire to. They sit up from the time of the operation and take their regular meals with a liberty and a liberality which,if not injurious, and my experience has so proved it, is a great luxury to the individual. I have found that I have not more than nine per cent. of prolapses. Dr. Knapp has had about seven per cent. As is well known, I have gone further than Dr. Knapp has yet attained. I do not see the necessity of excluding light from any of my patients. In over five hundred cases treated in the past five years I have allowed all these privileges of unrestraint to cataract patients and have had no occasion to regret it. The day will come when we shall find less need to restrict patients after cataract operations, and at the same time we shall not diminish the good results that all of us are so anxious to obtain. It was satisfactory to me in urging non-restraint practice, to find that Schweigger, who keeps his patients absolutely quiet, reports hernial troubles in seven per cent. He has, therefore, not gained much by his excessive care of keeping his patients on their back in bed. As to the removal of the hernia afterwards, I have been in the habit of excising those that I found. In the small prolapses, I have discarded excision and leave their disappearance to nature.

As to the dangers of extracting the anterior part of the capsule which I have done quite extensively of late, I find that whilst I secure a central pupil, posterior adhesions are not uncommon and that full dilatation under atropia does not constantly occur. I have however, found no detriment from this condition. The patients see well and continue to see well. I have not found that the adhesions led to any subsequent inflammatory trouble. I am still disposed to believe that if we can succeed in extracting the larger part of the anterior capsule by forceps, we avoid that second operation of cystotomy, which simple as it may seem, necessitates retaining the patients under treatment longer than they desire.

I am particularly gratified to find that Dr. Knapp has recently relinquished a great deal of the restraint which he formerly considered essential in the after treatment of cataract operations.

Dr. L. Webster Fox, Philadelphia:—It may not be inappropriate to bring to the notice of the members of the Association fine specimens of black cataract removed from three patients.

Case 1.—Female, age 50, gave the following history. In 1876 she gave birth to twins and immediately afterwards it was found that her vision grew dim, so that in six weeks the patient was not able to count fingers at arm's length. The cataract was removed May 11, 1890. The ordinary method was followed, with iridectomy, and the eye did well for three months, when a thickening of the capsule took place. The patient, during the period of her blindness, developed a high degree of convergent strabismus. On June 27, an operation was performed on both internal recti muscles and the eyes became straight.

By December the capsule in the left eye became so dense that vision fell to about 10-200. Having had no inflammatory reaction after the first operation, I obtained the consent of the patient to removed the lens of the right eye, which I did December 7. The operation was followed by satisfactory results. The following formula, cyl. + 6 ax. 180° ⊃ cyl. —3, ax. 90 gave 20-70, and with a sph. +3 extra front J. 8, was read. These glasses were worn until June 21, 1891, when another examination was made on account of a loss of the visual acuity. This formula was as follows: Sph.— 1. cyl. + 6 ax. 5°, two letters of 20-30 and with an extra front of sph. + 2 added J. 8 was read. The patient was examined in April of this year and no change was found in her vision. The thickened capsule still the same in the left eye. After the second operation erythropsia developed and continued for six months, when it gradually faded away and the eye has since remained normal to light sense.

Case 2.—Male, 61 years, was examined January 11, 1891, with the following history: The right eye was removed early in life on account of dropsy of the globe, by a physician in Boston. The left was always myopic to a high degree, but the patient was able to follow his occupation, book-binder, until April 13, 1880, when he suddenly lost his sight. He could not give a clear history of the trouble other than the sight grew bad and the cause was attributed to cataract. His family history was irrelevant. On January 25 I removed the cataract by the simple method; the only complication was a slight loss of vitreous which was highly fluid. The movement of the hand could be easily noticed after the operation. The eye did well until the night of the third day, when a sudden discharge of phosphene took place in the eye, which so alarmed the patient that he suddenly sprang from his bed; his nurse had difficulty in quieting him, an opiate was necessary to lessen pain. Early the next morning I found the eye ball very painful, high tension and vision gone. An intra-ocular hæmorrhage had taken place. Antiphlogystic treatment was resorted to, but the eye went from bad to worse and later the eye ball was removed to alleviate pain. Upon opening it I found complete detachment of the retina and a blood clot.

Case 3.—Female, age 61. Was not able to discern objects at a distance, high myopia, and during the last five years was practically blind. Upon examination I found double cataracts, both deeply pigmented but somewhat brownish in the centre. On June 21, 1891, I removed the lens (iridectomy) and the eye did well. Six weeks later an irido-cyclitis developed and the sight was lost. On November 8, 1890, I performed the simple method on the right eye and the result has been fairly satisfactory since. The patient has an acuity of vision equal to 20-100 with the best glasses. The specimens from the last patient are particularly interesting as they show the nucleus almost black while the cortical substance is translucent or almost white. These specimens have been preserved in a solution of boroglyceride. I shall have a chemist make an examination of these specimens and see whether any light can be thrown as to the causation of this pigmentation.

Dr. George E. Frothingham, Detroit:—This subject is one of great importance and I have been much interested in this paper. The statistics of Dr. Knapp show a very decided improvement over the statistics of former operations, but we all know that Dr. Knapp is a skilful operator, and in the reports of cases of simple extraction by many operators, the successes have been less numerous than in Dr. Knapp's cases. I remember looking over the report of Schweigger; there were 4.4 per cent. reported as absolute loss, and 19 per cent. of secondary cataract not reported as regards the results of the second operation. 76 per cent. only were reported as successful; and in the other reports, I have found that the percentage of successes was not better than in the operation of von Graefe. I have given some attention to this subject and have made a modified linear operation. I first extracted with the Beer knife. Soon afterward, the downward operation with the narrow knife was published. It was claimed to be as simple as couching, as perfect as the flap and as safe as the modified operation, and the suggestion was made that the operation might be done upwards. I published in 1874, an operation with the narrow knife very similar to, if not identical with, the simple operation. I entered the knife a little back of the clear margin of the cornea aiming to bring the apex within the clear margin of the cornea. I at first met with success, but I regret to say that I afterwards had to abandon it on account of the bad results which I had. I found that without iridectomy, there were the same difficulties in evacuating the lens as in the old flap operation. I found, however, the chief objection to be prolapse of the iris. This occurred in about ten per cent. of the cases and occurred as late as the fifth day, and some of the cases were very troublesome. I do not remember an eye that was absolutely lost.

Unless we can see these cases of prolapse early and replace them, we can do little. The eye which has been subjected to traumatism, bears illy another operation. As Dr. Knapp has declared, between the third and the tenth day we are debarred from operating on account of the increased danger. We must operate early or wait a long time and then inflammatory products have complicated so that I consider this one of the most serious complications with which we have to deal. I notice from Schweigger's report that he has 8.2 per cent. of prolapse and Dr. Knapp in 509 cases reports 42 cases of prolapse. We have therefore between eight and ten per cent. of prolapsed iris in this operation.

The question of sufficient vision is a very important one, and unless it can be shown that it gives a larger percentage of successful results we should be slow in adopting it.

In regard to the extraction of unripe cataracts by this method, my experience was that there was great difficulty in evacuating the lens thoroughly where the lens was immature and the cortex soft. We must have a lens that will slip through the iris, otherwise we cannot remove it except by traction instruments which cause bruising and stretching the iris, and result in complications such as iritis and plugging of the pupil with lens matter and inflammatory products.

My reason for iridectomy is that we can extract the lens through a smaller corneal incision. I believe that that will be generally admitted. It is a principle of general surgery that the larger the incision, the greater the traumatism and the less the likelihood of recovery. An incision of one-half the cornea is more dangerous and less likely to be kept in position than one not so large. Any of us who have made iridectomy with a small triangular knife know how impossible it is to displace the lips of the wound. The larger corneal incision endangers the continued coaptation of the wound long enough for primary union to take place. That is the reason for the iridectomy. I must admit that the traumatism of iridectomy is most grave. It remains to be shown that we increase the traumatism more by iridectomy than by an increased extent of corneal incision. Until that is shown, I think that the smaller corneal incision is based upon proper principles of surgery. It will take a vast time and much experience to establish the fact that an incision involving one-half the cornea is as safe as a smaller one. Four or five hundred or even a thousand cases are not enough to establish it.

Dr. Henry D. Noyes, New York:—I think that I am bound to say something in regard to the attempt to cure cataract by medication or anything else than extraction, for this matter is in the air. It exists in New York and has cropped out here. I may simply say that it is my firm belief after an observation of many years, that these cases of improvement in vision, which it is true do present themselves, are founded upon the fact that there is a healthier condition of the eye and of the patient; and furthermore, that a careful examination of the natural history, development and progress of cataract, will convince any one that there are various stages through which it passes, with corresponding changes in vision. At first cataract may be attended with opacities of the vitreous which may clear up, permit improved sight. What is still more important is, to discriminate the particular variety of cataract with which one has to deal. There are forms which may remain stationary for twenty years. There is a gentleman, a distinguished member of this Association to whom I said in 1884 that he was beginning to have cataract. I also told him that he would never lose his sight or the vision which as a surgeon he must possess. He still remains in the condition he was eight years ago. This assumption that galvanism, external applications, manipulations, massage, instillations of boro-glyceride, etc., can have any effect in improving the vision is founded upon insufficient evidence, and the mistake is extremely probable of supposing an improvement from natural causes to be the result of treatment.

In regard to operations for cataract, I do not propose to take up unnecessary time, but I have been learning from year to year and I have come to the conclusion that simple extraction is *a priori* the extraction that ought to be done. The question I think stands in this position, that those who do iridectomy ought to give a reason to justify it, because they mutilate the eye. I am free to admit that the visual result may be as good with as without iridectomy, but I am in a position to assert that the man who does iridectomy must give a satisfactory reason for the iridectomy.

In the second place, I am perfectly convinced that the essential thing in the extraction of cataract is not so much the precise position of the incision, although I believe that the limbus is the proper place, but it must be an ample incision involving close upon one-half of the cornea, I want one-tenth less than one-half. The diameter of the lens then makes no stretching of the corneal tissues. It is on this that the subsequent removal of soft matter depends and rapid healing of the wound may be predicated. I have grown a great deal more bold with the iris than formerly. I am not afraid to push it back with a sterilized spatula with great care, and remove soft matter. I recognize the value of manipulation of the lower lid. A little trick which is of value is to allow the aqueous humor to collect and then open the eye and allow the aqueous humor to remove the debris. I have discarded all attempts at irrigation of the anterior chamber, neither do I introduce a syringe; I occasionally employ external irrigation, injecting fluid against the wound. Cleansing of the anterior chamber is of the highest importance. The removal of the blood and softened lens substance which remains in the lips of the wound is best accomplished by a pledget of cotton moistened with a 1-5000 bi-chloride solution. With this the eye ball is swept off and the cotton can be passed over the edges of the wound and it brings substances out of the anterior chamber both by its direct action and by its capillary attraction. The opening in the capsule, I am not in the habit of making as Dr. Knapp does. I make it through the centre of the pupil and large, but I recognize the value of the cystome which he has demonstrated.

As to the dressing of the eye. I do not confine my patients with the rigor which formerly prevailed. I think that I have learned another thing and that is that the tendency to prolapse is largely produced by the pressure of the bandage. I think that favors prolapse. The attempt to tightly shut up the eye excites irritation and resistance on the part of the patient. As a dressing I apply a bandage more commonly of loose material with a small amount of cotton. This is often moistened with a solution of the bichloride to prevent the secretions from concreting and causing adhesions of the lids. This adhesion of the lids is one of the causes of irritation and causes the patient to make spontaneous efforts for his own relief. The prolapse of the iris is not so difficult of explanation. It depends upon three factors chiefly: First any rudeness in the operation itself giving rise to undue reaction, making the eye sensitive and preventing prompt adhesion of the wound. Second, and chiefly, the prolapse is produced by the efforts of the patient himself in his vigorous but unconscious efforts to keep the eye still. This may be brought about by the traction of the recti or the pressure of the orbicularis muscle. Thirdly, the prolapse may come from the accidental contact of the eye with the finger of the patient as he moves in bed. I think that the causes of prolapse may almost entirely be classed under the head of traumatism either from within or without. The reason that I still adhere to the bandage is because I consider the protection of the eye for the first two nights as an important safe-guard against accident. In the case of women where the bandage is troublesome on account of the hair, I sometimes use strips of india-rubber plaster with cotton beneath, but I am satisfied that undue pressure with the bandage is one of the favoring causes of prolapse. Furthermore, as to eserine or anything dropped into the eye, I have abandoned that. I am more apt to use atropia at the end of twenty-four hours, always at the end of forty-eight hours.

As to the capsule:—If there be any need for secondary capsulotomy, it is deferred until the second or third month, but I am perfectly ready to agree with Dr. Knapp in saying that capsulotomy is not always the simple operation which its ease of performance would indicate. I have seen it set up a most serious plastic irido-cyclitis, and early in my career I was made excessively cautious in doing this because of some sad experiences with irido-cyclitis and subsequent atrophy of the globe. Capsulotomy as described by Knapp is very beautifully conceived and admirably done at his hands, but there is another thing to be mentioned. We have inherited a fear of piercing the eye ball through the ciliary region but I think that in some respects we have grown too cautious about it. Within the last few years in occasional instances, where I had a thick capsule to deal with which one needle thrust through the cornea would not satisfactorily open, or which two needles passed through the cornea would not open, I have overcome the difficulty by passing a long double edged needle through the sclera and reached the pupillary area from behind, and although there is a little hæmorrhage, I have been surprised to find the reaction so insignificant. With the long lever thus afforded you can make a satisfactory opening which it is often impossible to do by any mode of procedure through the cornea. I have even passed one needle through the cornea and another long needle with double cutting edge through the sclera, in some difficult cases and attained success.

Dr. Eugene Smith, of Detroit:—Dr. Knapp has spoken of my forceps. I have brought with me several pairs that they might be seen. It is the forceps of Knapp with the exception of the dropping of the teeth. Finding it necessary to have the teeth project downward and backward to grasp the capsule, I had them made in that way. As that causes a little awkwardness in the introduction of the forceps, I have come to the conclusion that these teeth may be placed in a perfect plane. I have had an experience with thirty or forty cases and have yet to fail in extracting a piece of the capsule or in not so thoroughly rupturing the capsule as to prevent so far, every necessity for subsequent decision; I am fond of removing the anterior capsule.

My dressing is essentially the same as Dr. Knapp's.

It appears to me that those who advocate iridectomy hold that in order to get the lens out, you have to tilt it on its axis into the anterior chamber. Those of us who practice simple incision know that in the majority of cases this is not so, the iris slides up into the incision, the pupillary space corresponds with the incision in the cornea, the lens slides through and the iris drops back into the anterior chamber.

In regard to Schweigger's statistics I would say that they are different in his hospital and private practice. His percentage of successes is larger in private practice. Those who have visited his hospital know what some of his cases are.

I agree with Dr. Noyes in regard to what he has so well said in reference to our fear of the iris. I do not hesitate to return the iris forcibly, within reason, with a spatula and to repeat this two or three times if there is a tendency to prolapse. I do not hesitate to drop a solution of eserine, one grain to the ounce on the prolapsed iris. I have yet to see any untoward result follow these procedures. Of course I prefer not to do it. I have frequently followed the suggestion of Dr. Knapp, although I have not used the probe. I have taken the point of the spatula and rolled the periphery of the iris from beneath the limbus, and at the same time I try to remove any little fragments of cortical substance from the wound.

As far as the results from extraction of the capsule are concerned, I think that they compare favorably with those of other operations. If there is any little remnant present, I do not wash it out. I do not find a slight degree of simple iritis of any importance except occasioning a slightly prolonged retention of the patient. I escape it in a large proportion of the cases. As far as adhesions of the capsule are concerned, I have no doubt that in this operation we get them more frequently than we know anything about but the ordinary degrees of contraction and dilatation of the pupil under the natural influences of light is so small that in a large proportion of cases there is no teazing of the iris. If there be moderate adhesion, I do not think that it is as important as the danger of subsequent decision in many cases. That we may have to incise the posterior capsule, is well known.

Dr. X. C. Scott:—In regard to one of the cases reported as benefited under medicinal treatment, I would say that I saw the case a year ago. One eye was almost obscured by cataract and the other eye was very defective. The patient also informed me that there had been a gradual increase of the defective vision from the time it began to fail.

Dr. J. E. Minney, Topeka, Kan.:—I think that the simple operation requires more manual dexterity than where iridectomy is done. I have had one case in which prolapse occurred on the third or fourth day, and as Dr. Knapp has suggested, I allowed it to remain. The man's vision is excellent, but I am in constant dread of trouble.

I would take exception to one remark of Dr. Noyes in regard to iridectomy. When a man is called to a patient and does not prescribe any drug, he is expected to give a reason for not doing so. I do not think that the burden of proof rests upon those who do iridectomy, but upon those who do not do it.

Dr. B. Alexander Randall, Philadelphia:—If one must give a reason for continuing to do iridectomy, many of us will have to give as one reason, lack of that skill which comes from a large number of operations. Therefore I continue to do iridectomy.

In regard to the medicinal treatment of cataract, I have had some experience with my friend Dr. Risley, and have also myself followed a series of cases, not very large but distinct, where the swelling of the lens and the deterioration of vision was evident, and where I had myself seen the spicules encroach further upon the pupillary space. Yet I have seen such advancing conditions take on a retrograde change, the vitreous clear, the vision improve, and the lens, if not becoming more clear, certainly growing no more opaque nor swollen and productive of a fictitious myopia; and for a term of years this improvement has remained under treatment of a medicinal character.

Dr. Samuel D. Risley:—I think that the criticism of Dr. Erwin's paper grows out of the fact that he has not reported his cases fully. He has left the impression that the cataracts were cured, which I doubt very much if he intended to do. Some time ago I published a long series of carefully studied cases of incipiens, some of which I had followed for ten or twelve years, and last year read a second paper on the same subject before the Section. Dr. Noyes' remarks accord with my own experience. These cases must be placed in two classes. I have watched the opaque masses in the periphery for a long time and there has been no increase. We are all familiar with this large group. The claim which I made in my paper of last year was that the typical cataract was, in a large number of cases, not justly regarded as a senile change, but was the result of impaired nutrition of the eye, and that if the change were due to this cause, by improving the health of the eye by wisely directed treatment, we might retard the onward progress of the opacity of the lens. This experience has demonstrated the possibility of doing in a certain number of cases. Quite a large percentage of the cases reported went on to maturity, but many were retarded and still enjoy useful vision. There is one other point in favor of the treatment of incipient cataract, and that is, even if the onward progress is not arrested by the treatment, the eyeball is healthier and better able to withstand the trials of operation. I therefore feel that there is a field for study in this direction, and one which we should not altogether ignore. I wish to reiterate, however, that while I have again and again seen the anterior chamber grow deeper as the swelling of the lens subsided in incipient cataract, I have never witnessed the slightest diminution in any spicule of opacity in the lens under any method of treatment.

Dr. A. J. Erwin, Mansfield, O.:—You have doubtless observed that I do not suggest medication as a substitute for surgical interference in mature cataract. My distinct proposition is this, that where the existing vision is equal to the average vision that we get after extraction, it is better, all things considered, to save the lens with the vision as long as possible, for the reason that you not only save the patient the anxiety and distress of the operation, but also the risks that necessarily attend operations. Furthermore, there are many cases that could not be safely operated if ripe, and many others advance so slowly that the patient would be kept in comparative blindness for many years before an operation could be made. True, by medication the hundreds are not made by one fell swoop, as it were, like we do in extraction. Such treatment as I suggest takes time and work, but in our profession that should not be an objection. But the great obstacle to medication in cataract is the all-pervading surgery fad, and then it is so brilliant and so courageous to be a surgeon that one likes to forget all other therapeutic measures. I doubt, therefore, whether our more eminent oculists have either the time or inclination to give incipient cataract that long continued, attentive treatment as suggested in my paper, necessary to stop the advance of the disease. In answer to the criticism of an illustrious compeer from New York, whose book we read and whom we delight to follow, it is only necessary to say that he has, in his remarks, adopted the illogical method of thrusting an opinion upon this Society as a climax, after acknowledging that he had no experience in the medication of cataract. It is entirely gratuitous for any man to say that this or that therapeutic measure is worthless, unless he has carefully and persistently tried it. In the science of medicine the time is past when any man's opinion has either weight or value unless based upon observed facts. Hypothesis is nothing, opinion is nothing; facts alone count now.

I am glad my friend from Cleveland had the opportunity of examining Mr. Swineford, one of the cases in my report, five months later than my last examination. He has just informed me that the vision of his right eye was still good, but that he was nearly blind of the left, though not ripe, well, 2-200, as in my report, is probably about what he found. I do not pretend to say that these cases are permanently cured, or rather permanently checked, nor do I know that this treatment will permanently arrest the advance of cataract in any case; but I do believe that nearly all cases of incipient cataract can be arrested for at least a few years, and in many cases to the end of the lifetime of the individual, by these measures.

Dr. H. Knapp, of New York:—In regard to discarding the bandage and restraint, I think that Dr. Chisolm will agree with me that rest is one of the prime factors in obtaining primary union, so that it is merely a matter of compromise between the old roller bandage and other appliances for securing greater rest for the eye. If we could have secured greater rest with the roller bandage I should have kept it, but it was necessity that led me to the abandonment of this cumbersome dressing. In Heidelberg, I had little trouble in keeping the roller bandage on my patients. It seems that nationality has something to do with it. Put a roller bandage on the eyes of a restless patient in a New York summer, the next morning you will find it over the ears. This is worse than no bandage. In summer I use the simple bandage of which I have spoken. This gives me occasion to mention an appliance which has been used in Vienna for many years and advocated also in this country as a protection of the eye from traumatism. It consists in a mask of metal wire placed over the eye. The objection is that the wire moves with the roller and the stiff corner of the mask gets into the corner of the eye, doing more mischief than good.

So it is with the roller bandage—good in principle, unreliable in execution.

Another thing of which I want to speak is why I and many others, have abandoned iridectomy as a rule. Iridectomy is certainly advisable in a number of cases, preventing accidents that are worse than the enlargement of the pupil. I must say that I might have done more iridectomies than I have done—ten per cent. Dr. Chisolm says in advocacy of his isinglass plaster that he has no greater number of cases of prolapse, but in his last report there are thirty-three per cent. of iridectomies. The iris which is cut away, cannot prolapse. The number of intercurrent iridectomies in the simple operation must come into consideration.

Dr. J. J. Chisolm, Baltimore:—The report to which Dr. Knapp refers is a hospital report in which are included cases done by my assistants and they do iridectomies. The hospital report does not refer to my individual cases.

Dr. H. Knapp, of New York:—The danger in the simple operation comes from the prolapse of the iris, as it does in the combined operation and the danger from prolapse in the combined operation (the angular incarcerations) according to my experience is greater than the prolapse in the simple operation. Since I abandoned iridectomy, I have seen much less iritis, irido-cyclitis and other complications than before. Simple extraction is, I think, the safest operation and that is its principal claim. When I examine eyes on which extraction with iridectomy has been done by myself or others, I find incarceration of the iris in the corners not so rarely and incarceration of the capsule in the majority of cases. This leads to many reactive processes including sympathetic ophthalmia.

I never cut a prolapse, whether spontaneous or traumatic, unless I get it fresh. If there is blenorrhœa or another infective process, it is criminal to cut a prolapse, as this opens a door for the entrance of germs into the interior. These are only the immediate results of cutting the iris, but the later ones are just as deleterious. In the series of one thousand combined operations which I have reported, there were two or three cases of late suppuration following incarcerated iris. In some cases the incarceration was so small that it could not be seen. As a result of exposure there was purulent iritis and ophthalmitis in eyes that had been quiet for years. Such cases are well known. The danger from immediate prolapse of the iris is greater when the iris is cut than when it is left untouched. Some years ago while engaged in experiments with infective germs, I injected pyogenic cocci into the anterior chamber of rabbits. On examination of these eyes I found the cornea was full of germs, but the iris almost free from them. The iris protects the deeper parts. This fact may serve as a rule for guidance, that we should make an iridectomy only when the eye is still aseptic. Otherwise it is better to postpone the operation until all inflammatory irritation past.

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BY GEORGE FRIEBIS, M.D.,
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On Jan. 3, of this year, the Rev. Dr. B. of Philadelphia, brought his son Walter, now 7 years of age, to me desiring that something be done to improve his sight; stating that for some time past both he and the teacher had noticed that the boy had great difficulty in clearly defining objects, which were easily distinguished by other pupils of his class, at a reasonable distance from him, nor could he well define small letters at the usual reading distance. The examination revealed the rare condition known as congenital dislocation of the lenses; and in this instance the dislocation was symmetrical. I have the honor to show you an excellent drawing, made by Dr. J. Madison Taylor, of Philadelphia, illustrating the conditions. The lens in each eye was tilted upward, slightly backward and inward. The iris was responsive to light stimulation and only on close scrutiny could a slight tremulousness of the same, in the inferior, outer quadrant be detected. The fundus viewed by both the direct and indirect methods showed the curious phenomenon of aphakia with myopic refraction in both eyes. The lower periphery of the upward dislocated lens appeared as an irregularly marked black line. The fibres of the zone of Zinn, described by some observers upon the subject, as clearly discernible in the aphakial interspace, were absent in this case. Owing to the child's unsteadiness it was impossible to measure with accuracy the degree of refraction either of the lens or aphakial portion of the eye. I confess to have been slightly puzzled by the appearance of the lens, viewed by oblique illumination, deeming it at first glance, because of the strong grayish reflex of the lens, though entirely transparent by other methods of examination, a form of congenital cataract. The vitreous body and fundus were normal; the tension likewise. The test for vision in the R. E. = 15-70, L. E. 15-50 imperfectly; a manifest refraction at this time, which was rather hurriedly performed, gave a negative result. Upon a subsequent occasion, the pupils being dilated by atropine, I thoroughly tested his vision with different combinations, sphericals, cylinders and sphero-cylinders + and — which would be too wearisome to enumerate; I found the following formula gave the best results. R. E. S. —1 = cyl. —1 ax. 180 = 15-70 clearly, but in a moment he would again lose certain letters in the line. L. E. S. —1 = 15-50 perfectly but as in the R. E. he could not hold the line satisfactorily. A few weeks later on, I again tested his refraction without mydriatic or glasses. At this time vision for distance in the R. E. = 15-70, L. E. 15-50 imperfectly, these tests proving conclusively that the child was also amblyopic; a usual concomitant of congenital dislocation. Vision for reading was not improved by glasses in the slightest degree. In fact vision for small letters at about 8 inches was slightly better without glasses and he defined letters Snellen 1 at 8 to 10 inches fairly well, but had to search for them, this showing an amplitude of about 2 inches in each eye and that accommodation was not entirely abolished. Glasses were not prescribed. The field was tested and found to be normal; the color sense was unimpaired. Diplopia usually present and demonstrable in many cases of this character could not on account of the youth of the patient and some mental obtuseness be established.

In passing I would state, that Dr. Chas. S. Turnbull also saw this little patient with me but by no method of examination could we detect any other structural changes than those already mentioned. Both parents are healthy and have a family of nine children, all of whom have excellent vision. As some observers hold that congenital dislocation is largely due to heredity and that consanguinity often plays an important part in its causation, I closely questioned the father, a very intelligent man, as to his family history. I could not obtain a satisfactory answer confirmatory of his theory, but he stated that he had no definite knowledge of any hereditary tendencies in his wife's family. The late Dr. Wm. S. Little of Philadelphia, reported at the 19th meeting of the A. O. Society two cases of congenital dislocations of the lens, one was non-symmetrical and the other symmetrical. The latter case occurring in the practice of Dr. Turnbull, by whose courtesy I am enabled to show you an additional cut representing a double inward dislocation. Although this cut was shown at the meeting of the American Ophthalmological Society in 1883, yet I deemed it of sufficient interest, by way of contrast with my own case, to bring it to the attention of this meeting. Both patients were likewise markedly amblyopic and in each instance refraction of the existing ametropia gave a useful degree of vision. In Dr. Turnbull's case the lenses were so far dislocated as to make the eyes almost aphakial, but by the use of cataract glasses useful vision was obtained. Dr. Turnbull's patient gave no history of malformations in any of the members of his family or near relatives, but had himself a highly vaulted roof of mouth. Dr. Little's patient said that he had a cousin similarly affected and that repeat this two or three times if there is a tendency to prolapse. I do not hesitate to drop a solution of eserine, one grain to the ounce on the prolapsed iris. I have yet to see any untoward result follow these procedures. Of course I prefer not to do it. I have frequently followed the suggestion of Dr. Knapp, although I have not used the probe. I have taken the point of the spatula and rolled the periphery of the iris from beneath the limbus, and at the same time I try to remove any little fragments of cortical substance from the wound.

As far as the results from extraction of the capsule are concerned, I think that they compare favorably with those of other operations. If there is any little remnant present, I do not wash it out. I do not find a slight degree of simple iritis of any importance except occasioning a slightly prolonged retention of the patient. I escape it in a large proportion of the cases. As far as adhesions of the capsule are concerned, I have no doubt that in this operation we get them more frequently than we know anything about but the ordinary degrees of contraction and dilatation of the pupil under the natural influences of light is so small that in a large proportion of cases there is no teazing of the iris. If there be moderate adhesion, I do not think that it is as important as the danger of subsequent decision in many cases. That we may have to incise the posterior capsule, is well known.

Dr. X. C. Scott:—In regard to one of the cases reported as benefited under medicinal treatment, I would say that I saw the case a year ago. One eye was almost obscured by cataract and the other eye was very defective. The patient also informed me that there had been a gradual increase of the defective vision from the time it began to fail.

Dr. J. E. Minney, Topeka, Kan.:—I think that the simple operation requires more manual dexterity than where iridectomy is done. I have had one case in which prolapse occurred on the third or fourth day, and as Dr. Knapp has suggested, I allowed it to remain. The man's vision is excellent, but I am in constant dread of trouble.

I would take exception to one remark of Dr. Noyes in regard to iridectomy. When a man is called to a patient and does not prescribe any drug, he is expected to give a reason for not doing so. I do not think that the burden of proof rests upon those who do iridectomy, but upon those who do not do it.

Dr. B. Alexander Randall, Philadelphia:—If one must give a reason for continuing to do iridectomy, many of us will have to give as one reason, lack of that skill which comes from a large number of operations. Therefore I continue to do iridectomy.

In regard to the medicinal treatment of cataract, I have had some experience with my friend Dr. Risley, and have also myself followed a series of cases, not very large but distinct, where the swelling of the lens and the deterioration of vision was evident, and where I had myself seen the spicules encroach further upon the pupillary space. Yet I have seen such advancing conditions take on a retrograde change, the vitreous clear, the vision improve, and the lens, if not becoming more clear, certainly growing no more opaque nor swollen and productive of a fictitious myopia; and for a term of years this improvement has remained under treatment of a medicinal character.

Dr. Samuel D. Risley:—I think that the criticism of Dr. Erwin's paper grows out of the fact that he has not reported his cases fully. He has left the impression that the cataracts were cured, which I doubt very much if he intended to do. Some time ago I published a long series of carefully studied cases of incipiens, some of which I had followed for ten or twelve years, and last year read a second paper on the same subject before the Section. Dr. Noyes' remarks accord with my own experience. These cases must be placed in two classes. I have watched the opaque masses in the periphery for a long time and there has been no increase. We are all familiar with this large group. The claim which I made in my paper of last year was that the typical cataract was, in a large number of cases, not justly regarded as a senile change, but was the result of impaired nutrition of the eye, and that if the change were due to this cause, by improving the health of the eye by wisely directed treatment, we might retard the onward progress of the opacity of the lens. This experience has demonstrated the possibility of doing in a certain number of cases. Quite a large percentage of the cases reported went on to maturity, but many were retarded and still enjoy useful vision. There is one other point in favor of the treatment of incipient cataract, and that is, even if the onward progress is not arrested by the treatment, the eyeball is healthier and better able to withstand the trials of operation. I therefore feel that there is a field for study in this direction, and one which we should not altogether ignore. I wish to reiterate, however, that while I have again and again seen the anterior chamber grow deeper as the swelling of the lens subsided in incipient cataract, I have never witnessed the slightest diminution in any spicule of opacity in the lens under any method of treatment.

Dr. A. J. Erwin, Mansfield, O.:—You have doubtless observed that I do not suggest medication as a substitute for surgical interference in mature cataract. My distinct proposition is this, that where the existing vision is equal to the average vision that we get after extraction, it is better, all things considered, to save the lens with the vision as long as possible, for the reason that you not only save the patient the anxiety and distress of the operation, but also the risks that necessarily attend operations. Furthermore, there are many cases that could not be safely operated if ripe, and many others advance so slowly that the patient would be kept in comparative blindness for many years before an operation could be made. True, by medication the hundreds are not made by one fell swoop, as it were, like we do in extraction. Such treatment as I suggest takes time and work, but in our profession that should not be an objection. But the great obstacle to medication in cataract is the all-pervading surgery fad, and then it is so brilliant and so courageous to be a surgeon that one likes to forget all other therapeutic measures. I doubt, therefore, whether our more eminent oculists have either the time or inclination to give incipient cataract that long continued, attentive treatment as suggested in my paper, necessary to stop the advance of the disease. In answer to the criticism of an illustrious compeer from New York, whose book we read and whom we delight to follow, it is only necessary to say that he has, in his remarks, adopted the illogical method of thrusting an opinion upon this Society as a climax, after acknowledging that he had no experience in the medication of cataract. It is entirely gratuitous for any man to say that this or that therapeutic measure is worthless, unless he has carefully and persistently tried it. In the science of medicine the time is past when any man's opinion has either weight or value unless based upon observed facts. Hypothesis is nothing, opinion is nothing; facts alone count now.

I am glad my friend from Cleveland had the opportunity of examining Mr. Swineford, one of the cases in my report, five months later than my last examination. He has just informed me that the vision of his right eye was still good, but that he was nearly blind of the left, though not ripe, well, 2-200, as in my report, is probably about what he found. I do not pretend to say that these cases are permanently cured, or rather permanently checked, nor do I know that this treatment will permanently arrest the advance of cataract in any case; but I do believe that nearly all cases of incipient cataract can be arrested for at least a few years, and in many cases to the end of the lifetime of the individual, by these measures.

Dr. H. Knapp, of New York:—In regard to discarding the bandage and restraint, I think that Dr. Chisolm will agree with me that rest is one of the prime factors in obtaining primary union, so that it is merely a matter of compromise between the old roller bandage and other appliances for securing greater rest for the eye. If we could have secured greater rest with the roller bandage I should have kept it, but it was necessity that led me to the abandonment of this cumbersome dressing. In Heidelberg, I had little trouble in keeping the roller bandage on my patients. It seems that nationality has something to do with it. Put a roller bandage on the eyes of a restless patient in a New York summer, the next morning you will find it over the ears. This is worse than no bandage. In summer I use the simple bandage of which I have spoken. This gives me occasion to mention an appliance which has been used in Vienna for many years and advocated also in this country as a protection of the eye from traumatism. It consists in a mask of metal wire placed over the eye. The objection is that the wire moves with the roller and the stiff corner of the mask gets into the corner of the eye, doing more mischief than good.

So it is with the roller bandage—good in principle, unreliable in execution.

Another thing of which I want to speak is why I and many others, have abandoned iridectomy as a rule. Iridectomy is certainly advisable in a number of cases, preventing accidents that are worse than the enlargement of the pupil. I must say that I might have done more iridectomies than I have done—ten per cent. Dr. Chisolm says in advocacy of his isinglass plaster that he has no greater number of cases of prolapse, but in his last report there are thirty-three per cent. of iridectomies. The iris which is cut away, cannot prolapse. The number of intercurrent iridectomies in the simple operation must come into consideration.

Dr. J. J. Chisolm, Baltimore:—The report to which Dr. Knapp refers is a hospital report in which are included cases done by my assistants and they do iridectomies. The hospital report does not refer to my individual cases.

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In passing I would state, that Dr. Chas. S. Turnbull also saw this little patient with me but by no method of examination could we detect any other structural changes than those already mentioned. Both parents are healthy and have a family of nine children, all of whom have excellent vision. As some observers hold that congenital dislocation is largely due to heredity and that consanguinity often plays an important part in its causation, I closely questioned the father, a very intelligent man, as to his family history. I could not obtain a satisfactory answer confirmatory of his theory, but he stated that he had no definite knowledge of any hereditary tendencies in his wife's family. The late Dr. Wm. S. Little of Philadelphia, reported at the 19th meeting of the A. O. Society two cases of congenital dislocations of the lens, one was non-symmetrical and the other symmetrical. The latter case occurring in the practice of Dr. Turnbull, by whose courtesy I am enabled to show you an additional cut representing a double inward dislocation. Although this cut was shown at the meeting of the American Ophthalmological Society in 1883, yet I deemed it of sufficient interest, by way of contrast with my own case, to bring it to the attention of this meeting. Both patients were likewise markedly amblyopic and in each instance refraction of the existing ametropia gave a useful degree of vision. In Dr. Turnbull's case the lenses were so far dislocated as to make the eyes almost aphakial, but by the use of cataract glasses useful vision was obtained. Dr. Turnbull's patient gave no history of malformations in any of the members of his family or near relatives, but had himself a highly vaulted roof of mouth. Dr. Little's patient said that he had a cousin similarly affected and that his father was color blind. These are the only two cases that I have been able to find in the more recent literature within the past decade, clearly recorded as congenital dislocations, although foreign literature teems with a goodly number of this congenital aberration. Dr. Doensch in an admirable monograph enters at some length into the history of the subject, in which it appears, that earlier writers made no marked distinction between congenital and spontaneous dislocations, both being looked upon by the majority of observers as indicative of a morbid process. Not until Sippell's excellent essay upon the subject, who was himself afflicted with congenital dislocation, was a distinction made and the diagnosis accepted, that one was a morbid condition in which the lens was liable to further degeneration, such as sinking of the lens and loss of transparency, etc., while congenital dislocation is a permanent condition not likely to undergo such changes, and in which heredity and consanguinity are the most probable etiological factors. In support of the theory of heredity, Sippell quotes a number of cases, three of von Graefe's and three of his own, in which the condition was found to exist in one instance and in the others traceable to father and daughter. Graefe, Sippell, Dixon and other authors give strong support, in my opinion, to the heredity theory; a number of cases are reported of brothers and sisters of the same family, who were so effected. In Jonathan Wild's interesting little book on "Congenital Malformations of the Eye," which was kindly brought to my attention by Dr. Oliver, a member of this Society, I found four cases, which he quotes from Dixon, all occurring in the same family, and though the history of the case presented by me does not sustain the theory of heredity, it is but an isolated case and an exception to the rule, and my conclusions based upon a brief study of the literature of the subject, I would formulate as follows:

First, that congenital ectopia lentis is usually double.

Second, that it is a congenital malformation, the cause of which is not yet positively established.

Third, that amblyopia and ametropia are always concomitant conditions and that the majority of cases, so far reported, sustain the theory of heredity as the primary cause.

Discussion.

Dr. D. C. Bryant, Omaha:—I have under my care a family of seven persons, five of whom had the same trouble, dislocation of the lens. The parents have healthy eyes. In another family the mother and three children suffer with the same trouble. There is no myopia in these cases.

Dr. B. Alexander Randall, Philadelphia:—I remember seeing two cases of this condition it Jeager's clinic on the same day. In one the dislocation was up and in the other up and to the left. The point was made by Jeager that he regarded the symmetrical displacement as congenital, and the other as probably of traumatic origin; and I would ask if those of wide experience can throw light upon this question, which my own observation would leave an open one.

Dr. Edward P. Morrow:—It has been my fortune to see four cases of dislocation of the lens and to receive the history of another in the same family. The drawing shown is a perfect picture of the first case seen, a boy about 12 years of age having a double dislocation upwards and inwards. Shortly following this his sister presented herself, showing precisely the same condition, again inside of the year another sister and the mother similarly affected. From the mother, a history was obtained of her sister, whom she said was affected in a like manner. Each of these cases would accept either a convex or a concave lens with slight improvement of vision. There was no movement of the lenses obtained in any of the cases.

Dr. Eugene Smith, Detroit:—It may be of interest to speak of a case of voluntary dislocation of the lenses that has come under my observation. When the individual tipped his head forward both lenses would come through the pupils, when he threw his head back the lenses would return. I advised iridodesis and in the meantime used eserine. He went to New York where operation was advised against and pilocarpine prescribed.

Dr. George Friebis, Philadelphia:—The remarks which have been made are corroborative and sustain the views I have expressed, that heredity is the most prominent etiological element in the production of this condition.

INFANTILE CATARACT.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association. held at Detroit, Mich., June, 1892.

BY ALBERT R. BAKER, M.D.,
OF CLEVELAND, O.
PROFESSOR OF DISEASES OF THE EYE, EAR AND THROAT, IN THE MEDICAL DEPARTMENT OF WOOSTER UNIVERSITY; OCULIST AND AURIST TO THE CITY, WOMEN AND CHILDREN'S AND UNIVERSITY HOSPITALS.

I selected this subject, not because I had any new facts to communicate or new operations to propose, or new theories to advance; but because my experience, observation and reading has led me to believe that, as a rule, we do not treat infantile cataract as successfully and as intelligently as we do many other eye diseases. If I am correct in this supposition, an interchange of ideas on this important subject at this time cannot fail to be of value.

I know of no subject more perplexing to the medical student than the classification of cataracts; they have been classified as to age as congenital; infantile, juvenile and senile, as to consistency as fluid, soft, mixed and hard. They may be capsular or lenticular. Capsular cataracts may be pyramidal anterior polar, posterior polars, or degenerative. Lenticular cataracts may be nuclear, cortical or zonular. Cataracts have been classified as to cause, as albuminuric, diabetic, traumatic, etc. They may be simple or complicated, primary or secondary, ripe or unripe, mature, immature or hypermature. This list might be continued almost indefinitely, but is sufficient to illustrate the protean forms in which lenticular opacity presents itself to the ophthalmic surgeon, and it is in the child that we find the most remarkable variation, in the cases brought to our notice. It was that prince of British ophthalmologists, Mr. George Critchett, in a lecture published in the *London Lancet* as long ago as 1855, who said that "Congenital cataract deserves very careful notice on account of the numerous aspects it assumes, the frequency with which it is overlooked, the baneful influence it may exert upon the prospects and career of the patients, and the favorable results of suitable treatment. The more we have an opportunity of observing these cases, the more evident does it become that nature revels in variety. Even in her morbid operations, when we fancy we have exhausted every possible form, some new manifestation presents itself."

For our present purpose it is not necessary to enter into an extended discussion of that much debated question, whether cataract is ever congenital, as it makes little practical difference (although the question may have an etiological value), whether it is present at birth or comes a few hours or days afterward. Dr. Alt[1] saw a case of total lenticular cataract in a baby 24 hours old. The writer saw a milky white lenticular cataract of one eye, other eye normal, in a child 24 days old. The mother and an intelligent nurse said the opacity was present at birth. Granting that cataracts may be congenital, it seems to me more desirable to substitute the term "infantile cataract," so as to include all those occurring in infants and young children. Practically many of these cases do not come under the observation of the oculist until later in life, often being overlooked until 5, 10, and even 15 or 20 years of age.

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[1] American Journal of Ophthalmology, December, 1887.

The most frequent form of infantile cataract is the lamellar or zonular. These cases are not infrequently associated with other congenital defects, the intellectual faculties often being very imperfect. Mr. N. C. Macnamara,[2] in his Presidential address to the Ophthalmological Section of the British Medical Association, remarked, in opening the discussion of this subject, that "it was well known that in fœtal life branches of the hyaloid artery covered the posterior surface of the lens, and advanced forward over its margin, helping to form the membrana capsula pupilars. If, from fault in the development of the eye, this vascular layer persisted after birth, it was apt to give rise to a film of connective tissue, extending to a greater or less extent over the posterior surface of the lens, and so forming a zonular cataract. In some instances a small patch alone was left to mark the spot at which the hyaloid artery had passed on to the lens, in other cases a central opacity existed, with radiating bands stretching toward the periphery of the lens. Microscopical specimens have demonstrated the fact that some of these zonular cataracts consisted of a film of connective tissue, together with remains of the hyaloid artery." This seems to be the most satisfactory explanation yet offered of the pathology of zonular cataracts, and it seems much more rational to attribute the convulsions which have figured so largely in the literature of this subject to the same cause which brought about the defective development of the lens, the defective mental faculties, and the other bodily defects so frequently seen in these cases. An attempt was made to secure statistics bearing upon the relative frequency of cataracts associated with hare-lip, cleft palate, coloboma of the iris, total absence of iris, spina bifida, etc.; but could find nothing satisfactory. I regret exceedingly that I have not kept more accurate records of these cases occurring in my own practice, and yet the experience of any one man, unless he had exceptional advantages for observation, would not include enough of these cases to be of much practical value. Upon referring to my case books I find records of only two cases of congenital total absence of the iris, and in both of which cataracts were present. One of these had interstitial keratitis and typical Hutchinson teeth. The other was confined to a penal institution and a confirmed criminal. One lens was partially dislocated, and by throwing his head backward in a peculiar jerky manner he could throw his lens partially back like a door, out of the visual axis, and thus secure a fair amount of useful vision. He said his father's eye had just the same appearance. Of nine cases of coloboma of the iris two had cataract. I have met with two cases of cataract associated with hare-lip, and one with spina bifida, and a number of cases had Hutchinson teeth.

If time permitted, it would be interesting to consider hereditary influence in the production of zonular cataract. A few years since I was called to operate upon three brothers, aged respectively 11, 21 and 29 years. There was one other son and three daughters in the family whose eyes are normal. The parents were cousins and one grandparent had senile cataract, otherwise the family history is good.

Next frequent to the zonular in infants is the anterior polar or pyramidal cataract. Notwithstanding the great diversity of opinion as to the etiology of these capsular cataracts, I have no doubt but that they are nearly all due to a perforation, or at least inflammation, of the cornea. It is not necessary that any corneal opacity should be present. About two years ago a child was presented at my clinic, 2 months old, with a history of having had a severe attack of ophthalmia neonatorum, with perforation of both corneæ. There was a dense white corneal opacity, including nearly the whole cornea, so that it was impossible to see the pupil of either eye. In the course of a few months the corneal opacities cleared up so that typical anterior polar cataracts could be seen, which were removed by the suction operation. At present there is no corneal opacity, and it would be impossible from any examination to say that there had been a perforation. It is surprising that so accurate an observer as Dr. Alt[3] should not have seen such cases.

Not infrequently the lens undergoes degenerative changes, its fluid constituents become absorbed, leaving behind a tough dense membrane often containing more or less calcareous substance. I have met this condition most frequently in traumatic cases or in cases which have been operated upon repeatedly by the needle operation. I have come to look upon the usual needle operation as a frequent cause of this condition. How often after needling an infantile cataract several times have you found the pupil still occluded with the dense white remains of the capsule and shrunken, possibly calcareous lens, through which you have been able with great difficulty to tear a hole—a poor excuse for a pupil, but you congratulate yourself upon securing even that? This has been my unfortunate experience so frequently that I have almost abandoned the needle operation in cases of zonular as well as in pyramidal cataracts. After trying several operations my preference is for the linear extraction combined with the suction operation with Mr. Teale's instrument, in which the suction is made by the mouth of the operator. I have never been able to get a Bowman syringe that I could use so well.

The anterior capsule should be divided in both the verticle and horizontal meridians the full extent of the dilated pupil, and the lens pretty thoroughly broken up, but avoid perforating the posterior capsule. Keep the pupil well dilated, and in from three to five or six days, possibly seven, make a broad incision at the outer part of the cornea about two or three lines from the sclero-corneal margin, with the keratome. In many cases by partially withdrawing the instrument and pressing it backward, and as the aqueous escapes, the softened lens matter runs out almost of its own accord, the remaining portion if any, can often be coaxed out with a little stroking of the opposite side of the cornea with the spatula. If there is a hard nucleus it can be delivered in the usual manner. If the pupillary area can not be thus readily cleaned the suction curette can be inserted, and by sweeping it around carefully the remaining cortical substance can be removed. Care should be taken not to injure the iris. In one instance in which I made the incision near the sclero-corneal margin, I had a slight anterior synechia, and the pupil is slightly oval in shape, but otherwise there have been no untoward symptoms. Since this accident occurred I have made the incision in the cornea further forward, and the danger of synechia is lessened, and the lens substance removed more easily; mydriatics can be used much more freely so as to keep the pupil well dilated without danger of prolapse. By this method patients are discharged in from two to three weeks, which under the old method would have occupied months, and often valuable time in the child's education sacrificed. In very young children on account of the difficulty in managing the patient, it may be preferable to resort to the needle operation. In these cases there is not the same necessity of securing useful vision at once, and yet in cases showing a disposition to develop nystagmus, I very much doubt the propriety of wasting time to allow the lens to absorb when it can be removed so easily. The lens however, is absorbed much more quickly in those cases than in older children. I have followed the rule applicable to senile cataract, and operated but one eye at a time, and have several times questioned the advisability of making an iridectomy, and of permitting the lens to remain in one eye so as to allow of a certain amount of accommodation for near work.

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[2] British Medical Journal, September 12, 1891.

[3] American Journal of Ophthalmology, December, 1887.

I have under my care now, a bright little boy six years of age, whose vision in left eye was $\frac{5}{200}$ increased by dilating the pupil to $\frac{15}{200}$, in the right eye $\frac{20}{200}$ with pupil dilated increased to $\frac{20}{70}$. I removed the lens of left eye by the method detailed above, and secured vision $\frac{20}{20}$ with + 10 D. Before the operation there was considerable nystagmus which has all disappeared. When the pupil of right eye is dilated with cocaine he can read Jaeger No. 3, and has considerable amplitude of accommodation, especially for larger type.

I should be pleased to know if any of the members of the Section have had any experience in this direction. Would the amount of accommodation in such an eye be of any practical advantage to the patient, and if so, would it be enough to compensate for the deformity of an iridectomy?

Would there be any objection to postponing farther operative interference until later in life, when the patient could express an intelligent opinion on the subject?[4]

It has been my custom to recommend operation within the first year. I operated upon one case at two months. There are cases which it may be advisable not to operate upon at all.

A doctor friend of mine has a typical anterior polar cataract of both eyes, so prominent are they, that he always wears colored spectacles when in company, to hide them. He completed a regular collegiate course, graduated in medicine, and is now doing a large general practice.

If operative interference is decided upon, the question is to be answered whether the lens is to be removed or an iridectomy is to be performed.

I have followed the rule laid down by my old instructor, Mr. Streatfield, and removed the lens in all cases in which the vision could not be improved, by suitable correction of refractive errors, with the pupil widely dilated to $\frac{20}{50}$. Practically, this rule has left but few cases for iridectomy, and those cases in which I have made this operation have been rather disappointing in results, and in several instances a subsequent removal of the lens became necessary.

In conclusion I will offer the following for your consideration:

1. Infantile cataracts should be operated upon early, within the first year if possible.
2. In pyramidal and zonular cataracts in which vision cannot be improved to $\frac{20}{50}$ after fully dilating the pupil, removal of the lens is to be preferred to iridectomy.
3. Fluid cataracts are best removed at once by linear extraction.
4. Soft cataracts including zonular and capsular, are best treated by first breaking up the lens thoroughly, and removing a few days later by the combined linear extraction and suction operation.
5. Simple decision is sufficient in very young infants, unless nystagmus should be present.
6. Only one eye should be operated upon at a time.
7. There are a few cases in which it may be advisable to extract one lens for distant vision and make an iridectomy on the other eye, so that a certain amount of accommodation may be preserved for near work.

143 Euclid Ave.

Discussion.

Dr. B. Alexander Randall, Philadelphia:—The point was raised in the paper in regard to zonular cataract as examined with the microscope, *that a portion of the hyaloid artery of the fœtus had been traced into the cataractous zone.* This matter has escaped my observation, and is contrary to anything that I have studied in the matter. I would ask if I heard aright. The hyaloid artery with its capsular and pupillary net-work is wholly external to the lens-capsule, and I cannot conceive of its having any connection with the opaque laminæ of lens-substance within.

Dr. A. R. Baker, Cleveland, Ohio:—I have presented this paper not so much because I had any new ideas to advance as with the hope of gaining some information upon the points presented. In reply to the question of Dr. Randall, I would say that I am indebted to Macnamara for that point in regard to the remains of the hyaloid artery being present in these cases He says that microscopically, remains are to be seen in many of these cases.

INJURY TO THE LENS WITH CASES.

Read before the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June 7, 1892.

BY B. L. MILLIKIN, M.D.,
OF CLEVELAND, OHIO.

I desire very briefly to call your attention to a class of cases of great frequency, especially in large manufacturing districts, and which we are all continually being called upon to treat. In few text books do we find any adequate consideration of this important subject, and I scarcely know of any English work on Ophthalmology which is particularly explicit about injuries of the lens, or lays down good rules for the management of such cases. While time will not permit us to enter upon a full discussion of the topic, I have thought the consideration of a few of the more important points might not be without interest to us as specialists or as general practitioners.

Few things are more demoralizing to a patient than to suddenly find he has lost his eyesight, and few accidents can more excite our sympathies.

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[4] I think Mr. Critchett suggested this procedure many years ago, but I could find no record of cases in which it was practiced.

From a clinical standpoint we may divide the injuries of the lens into two classes, viz: those where the chief injury is to the lens mass itself, and second where there is, in addition, a grave lesion of other structures of the eyeball, the latter class comprising a much larger proportion of all the cases with which we meet. In the first class are comprised such injuries as bits of steel or iron lodging in the lens substance, spicules of iron penetrating the cornea and the lens, but not remaining,etc., and these producing very different lesions,depending upon their size,form and the force with which they enter the eye. When these penetrate the lens and enter the vitreous humor, another class of complications arises, depending upon the ultimate lodgment of the foreign body. The second class of cases comprises a series of injuries of great importance and variety, depending entirely upon the structures involved, the most serious of which are those associated with injuries to the ciliary body, which are always very grave; also, the results of injuries due to puncturing substances will depend materially upon whether the foreign body remains within the eye, or not. The seriousness of the injury of the lens will likewise vary according to the age of the patient, destructive changes being much less likely to occur in young patients than in those older. Almost all injuries of the lens are liable to terminate in traumatic cataract, more or less complete, depending upon the amount of disturbance of the lens substance, and especially the capsule.

In the early history of an injury to the lens, the diagnosis is usually not difficult, and by dilating the pupil with a few drops of cocaine or homatropine, a clear view of the lens with the ophthalmoscope, or with the oblique light will usually serve to locate the position of the foreign body, if present. If, however, there has been in addition, extensive injury to the iris or ciliary body, the location becomes difficult, or impossible, depending upon the amount of hæmorrhage and other disturbances to the structures. A day or two after the injury, even in cases where the foreign body has been very minute, with the ophthalmoscope the course of the foreign body may be made out by a line of opaque matter in the lens, so that one can very readily trace through this substance the course of the offending body.

The progress of the development of traumatic cataract varies greatly in different cases, usually depending, in all probability, on the extent of the lesion of the capsule. Very often the extent of the opaque portion of the lens changes rapidly, and frequently opaqueness of considerable extent will be rapidly absorbed, leaving the lens clear. Sometimes a spicule of iron which penetrates far into the body of the lens will leave no prominent opacity, the track clearing up completely, as in one of the cases which I shall report. In other cases, an opaque line, marking the course of the foreign body may remain for years, and if near the periphery of the lens, will produce no permanent interference with vision. I have selected the following cases as illustrating various injuries of the lens, and which may serve as types of a very large class.

Case 1.—On the 2nd of July, 1888, V. L., æt. about 40 years, a machinist, was struck in the left eye by a long sharp splinter of steel,which was pulled out by a fellow workman. The foreign body entered the eye just below the lower border of the pupil, perforating the iris, and penetrating deep into the lens. Just after the injury, vision was diminished very considerably, but at the time of the examination, he had the following vision: O. D. V. = 6-6 ? O. S. V. = 6-9 ? Under a few drops of a solution of homatropine the pupil dilated, irregularly, and only to a slight degree, although the drops were used several times. On the cornea was a speck or scar marking the entrance of the foreign body, and directly behind it a point in the iris, but with the ophthalmoscope I was unable to detect, at the time, any evidences of penetration of the lens. Atropia was prescribed, to be used three times per day, and a compress and bandage applied. On the following day the pupil was found to be irregularly dilated, being adherent in the lower portion to the capsule of the lens. The ophthalmoscope showed clearly a line of striation, the opacity through the lower portion of the lens being very perceptible. A week later the eye was much better, and showed but little opacity in the lens, only a fine striated line through the lower edge of it where the foreign body had penetrated,and the pupil was dilated ad maximum. Vision was normal.

Case 2.—I have reported this case in full elsewhere,[1] and shall here only refer to the points of interest in this connection. On the 18th of March, 1871, a piece of cap from a musket entered the eye of E. M. O., now æt. 33 years, penetrating the cornea at the outer margin of the right eye, cutting through the iris to the outer border of the lens. At the present time, his vision, after the removal of the foreign body from the posterior chamber, is sufficient for all ordinary uses. The ophthalmoscope shows, in the line of the wound through the lens, a dense white opacity, simply covering an area as large as the original injury to the lens structure must have been, and in all these years there has been no additional development of the traumatic cataract.

Case 3.—The following is an example of a very frequent accident. H. T., about 12 years of age, while shooting a small toy cannon, received an explosion of powder in the face, the eyes being thoroughly peppered, and many pieces were removed from the cornea of both eyes. The corneæ were so opaque that a careful examination of the anterior chambers was difficult or impossible. Three weeks after the injury, when the corneæ had cleared up, it was found that a small grain of powder had entered the anterior chamber of the left eye and evidently wounded the capsule of the lens,having also penetrated the pupillary border of the iris, this being found attached to the capsule, with a considerable area of the lens adjacent to the foreign body opaque. Under the alternate use of atropia and eserine the iris was almost completely separated from the capsule, and the lens matter has gradually cleared up, until at the present time there remains only a slight opacity on the capsule, with the small powder grain still showing, and V. = 6-6 ? although the opacity is located just at the lower border of the pupil.

Case 4.—On the 18th of May, 1891, Miss E. B., æt. about 20, came to me with the following history: On that morning, while passing through a field, and over a barbed wire fence which had fallen to the ground, she felt something strike the right eye, which she thought might be one of the barbs of the wire, but was unable to say definitely. Immediately she noticed that she could not see, and this was followed by severe pain in the eye and head. Upon making an examination, I found in the centre of the cornea a vertical wound, ragged in appearance, perforating the cornea, some of the lens matter having escaped into the anterior chamber. T = — 2.

Atropia was instilled into the eye, and a compress and bandage applied, after carefully cleaning the eyeball and lids. On the following day the pupil was well dilated, regularly, and the ophthalmoscope, and oblique illumination showed clearly the wound in the cornea and in the capsule of the lens just below the centre, with the extruded lens matter, which was very slight in amount. The lens showed a number of striæ, running from the centre regularly to the periphery, like the spokes of a wheel. On the first of June following, the striæ in the lens were clearing up, very evidently being smaller and less opaque, while the spot in front of the lense was smaller, and the lens matter in the anterior chamber had entirely disappeared, leaving simply a large spot in the front of the lens and capsule. She then counted fingers at eight feet. By the 28th of August, nearly all the striæ had disappeared, leaving only a small roundish opaque spot in the lens capsule, together with a corneal scar, and the pupil was fully dilated. I have since heard, but have had no opportunity of making an examination, that the vision of the eye had again failed. Probably there has been a redevelopment of the traumatic cataract.

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[1] Trans. Am. Oph. Soc., Vol. V, p. 565, et seq.

Case 5.—The following case is of interest on account of a somewhat similar accident occurring to each eye at considerable intervals. On the 3rd of April, 1890, I was called in consultation to see J. D., æt 21, from whom I elicited the following history: Ten days ago he was struck in the left eye with an iron burr, which produced a lineal wound of the cornea, evidently cutting or rupturing the capsule of the lens, as there was much inflammation of the eye; but it is now quiet and he has not had great pain. T = n. Lens is swollen up very largely, filling almost completely the anterior chamber, and attached to the edges of the pupil; pupil fairly well dilated under atropine. Under cocaine, the lens matter in the anterior chamber was removed by an upward incision with the keratome, leaving the pupil fairly clear, but still some cortical matter remaining. Atropia was used to keep the pupil dilated, and a compress and bandage applied for a few days. On the 2nd of May following, there was considerable opacity in the pupillary space, so that the details of the fundus could not be made out. Under cocaine another operation was performed breaking up the soft lens matter and slitting up the capsule, after which patient could see fingers readily and the eye continued to do well. At present, with +14.00 D's glass V = 6-6?

On the 6th of April, 1891, while working in boiler works, he was again struck with a bit of steel, in the right eye, which produced a vertical wound through the corneoscleral junction at the lower outer quadrant, and the anterior chamber was filled with blood. Three days later, an examination with oblique light disclosed striæ in the lens; pupil partially dilated with atropia, but eye doing very well. Evidently the traumatic cataract was developing rapidly, with little or no pain. By the 14th of May, the eye had improved very satisfactorily, the wound being well closed, the irritation having greatly subsided, leaving the pupil somewhat irregular in shape with attachments in the region of the wound. The ophthalmoscope showed the middle portion of the lens clearing, but with a more dense opacity directly behind the seat of the injury. Two weeks later the lens had cleared up almost entirely in the central portion, leaving the opacity confined to the neighborhood of the injury, and the outlines of the fundus could just be made out with the ophthalmoscope, and V = 6-60. By the middle of December following, sight had failed very materially, and he was then able to count fingers only at six feet, and the traumatic cataract was again developing, and now had involved almost the whole lens.

Case 6.—On June 1, 1892, W. H. B., æt. 25 years, came to me with the following history: On the 26th of March last was struck in the left eye with a small piece of steel, which he thought did not enter the eye, but was unable to see after the accident. Immediately after the accident there was no pain, so that he continued his work from the time of the injury, in the morning, until late in the evening, before consulting a physician, nor has there been much pain since. The physician who first saw him sought for the foreign body, but did not succeed in removing one. A short time afterwards an operation was made for the removal of the opaque lens matter, but he has been unable to see, except bare outlines of objects in the outer portion of the field. At present the pupil is fairly clear; there is an irregular ragged scar of the cornea, probably produced by the foreign body. The iris is adherent above, and with the ophthalmoscope we are unable to see the deep structures of the eye at all, on account of the dense opacity of the vitreous. T + 1.

The eyes remain very sensitive to both light and use, in near work, to the present time. The probabilities are that the foreign body remains in the deep portion of the eyeball, and may yet give serious trouble.

As to the prognosis of all injuries of the lens, whatever may be their extent, we must consider it essentially grave, and out of all cases, very few escape without some permanent damage to the lens structure; but we believe that much can be done in the way of treatment and management of such cases immediately after the injury, or for a long time subsequently, in preserving the proper function of the lens and eye. In young persons especially is this true, and by promptly putting the organ, as well as the patient, at rest, in many such cases, great good can be accomplished. After a considerable experience with injuries of the lens, I am convinced that the rest afforded by complete paralysis of accommodation is of the utmost advantage, as protecting the lens tissue from the disturbances which necessarily must arise from the effort of using the eye.

Our treatment must be based upon a somewhat different principle in the cases of the young and the old. Of course in all cases of foreign bodies in the eye, whether the lens is injured or not, the first requisite is the removal of the offending body, if possible. The next most important step in the treatment of such cases must be the institution of absolute cleanliness, and every organ which has been so injured should be thoroughly cleansed by means of aseptic or antiseptic washes. For this purpose, simple boiled water may be used freely to wash out the eye, or solutions of boracic acid and bichloride of mercury, 1 to 5,000, for the same purpose. With the ordinary medicine dropper and any of these solutions, together with pledgets of absorbent cotton, the wound can be thoroughly cleaned, thus preventing very largely the danger of infection. One of the great dangers and sources of annoyance in all these cases where the point of injury is in contact with the iris, is the plastic adhesion of the iris to the lens, thus producing a perpetual focus of irritation, so that to avoid this tendency, I believe it is of the greatest service to use *a solution of atropia sufficiently strong to dilate* freely and thoroughly the pupil, and thus keep the iris out of harm's way, as well as giving complete rest from the disturbances due to accommodation. I believe that in younger persons particularly, there is little or no danger of development of glaucomatous symptoms, which some authors seem to fear so much. These symptoms are largely, if not entirely, produced by the swelling of the lens, thus forcing the iris into the outer angle. If glaucomatous symptoms do arise from the escape of the lens matter into the anterior chamber, or from its swelling due to its contact with the aqueous humor, one can readily resort to the evacuation of the contents of the anterior chamber, and so obviate the increased tension from this source. I believe it, therefore, to be the part of wise and conservative surgery, in all injuries to the eye of any considerable magnitude, to put the patient at rest—in bed if necessary—to put the accommodation completely at rest, and to put the sound eye as well, preferably by bandaging both eyes for a few days. I am convinced that by keeping such an eye completely at rest, for some weeks if necessary, very favorable results will often follow. I have no doubt that the primary clearing up of the cataractous condition of some of these cases which I have reported, has been due to the continuous use of atropia, even after all indications of the external wound have disappeared, except the cicatrices, and that the redevelopment of the cataract some months later was due to the excitation produced by the use of the organ. I could see no great objection to keeping up for an indefinite time the use of a mydriatic, without danger or inconvenience, except as may sometimes arise from its local irritation. Of course it is often difficult or impossible to maintain control of patients for a sufficient time under such circumstances. Compresses and bandages I should continue only until the external wound had healed, except in some cases where there has been much hæmorrhage, in which absorption takes place more rapidly under moderate pressure. In many cases with iritic attachments, much can be done to loosen or break them up entirely by the alternate use of atropia and eserine, thus leaving the eye less liable to recurring inflammatory attacks.

Of the methods and time for removal of traumatic cataract, it is not necessary to speak, as our object has been rather to point out or indicate the treatment of cases prior to the necessity of operative interference.

In old people the use of mydriatics must be watched much more carefully, for in these the development of glaucomatous symptoms is very much more to be feared, while on the other hand, the condition being so much less active in these patients, this source of annoyance becomes proportionately less, depending upon the age of the patient.

Discussion.

Dr. S. C. Ayres, Cincinnati, Ohio:—I have been much interested in the paper, and particularly with that portion which related to partial opacities of the lens. I have seen quite a number of these cases, and they have always excited my surprise and interest. We are taught to believe that injury of the lens capsule is certain to produce opacity of the lens, swelling and the consequent results. I have seen a number of cases in which there were limited opacities of the lens, and in which in all probability, foreign bodies had penetrated to the vitreous, and had left limited opacities in the lens and capsule. It is not easy to explain these cases. It serves to show the healing properties in the capsule, and it shows that very often it will close up when wounded.

Dr. Edward Jackson, Philadelphia:—I was much interested in that portion of the paper which referred to the retention of vision through an injured lens. I recall one case that came to me when 82 years of age. There was a history of an injury in boyhood. There was a scar on the cornea and corresponding portion of the iris and opacity of the corresponding quadrant of the lens in which there had probably been a penetrating wound. He said that vision had not deteriorated since immediately after the injury. I watched the case for eight years longer, and the other lens was becoming more opaque, but the changes in the injured eye were not more rapid.

Another case that I have seen within a year, was one that came with a history of injury and penetrating wound with immediate impairment of vision; then subsequent improvement, followed by deterioration commencing again within two or three weeks. In this case there had been, over a year before, a penetrating wound of the cornea and iris, and I have no doubt of the lens. When the patient first presented, the details of the fundus were so far veiled that only the larger vessels could be seen. Within a month the lens was entirely opaque. This case is quite similar to one mentioned by Dr. Millikin.

The most interesting case of this kind that I have seen is one now under observation. The patient is six years of age, and has double congenital dislocation of the lens. The lower margin of the lens coming back of the pupil, prevents anything like distinct vision. There were slight opacities in the lenses. I undertook to needle one of them. I needled it four times, the last two times very freely; and within two weeks, six weeks after the last needling, there is no general opacity of the lens. Twice I passed the needle entirely through the lens, and after the operation could see its track. That track almost entirely cleared up. Just at the point where the wound was made in the capsule, a little mass of opaque lens-substance projected, and in the lower quadrant of the lens there is a marked notch showing there has been some absorption, but the mass of the lens still remains clear.

Dr. G. A. Aschman, Wheeling, W. Va.:—I was much interested in that part of the paper which showed that often there is little trouble after injury to the lens. I recently had under treatment a man 50 years of age, who had lost one eye several years before. He had a ripe cataract in the other eye with a history of injury. After the injury he noticed a decrease of vision in the eye and was treated by a physician for two weeks only, when he returned home without further trouble than a gradual loss of sight. I examined the cornea carefully and found a very slight scar and as he was at an age when we should expect senile cataract, I decided to operate. I made the extraction and found in the lens a very small particle of iron. The operation was done six months after the injury, and as V. = 20-30 resulted, he was able to perform all work as well as ever.

Dr. Eugene Smith, Detroit:—I can bear out what has been said about punctured wounds of the lens occasionally clearing up without cataract or destruction of the lens. I have in mind two cases. A child ran a needle through the cornea penetrating the lens. Following this there was opacity about the size of the needle extending nearly through the lens. This entirely cleared up as did also the opening in the capsule. The child now has normal vision.

In the second case a piece of wire 1-24 of an inch in diameter was thrown across a room and struck a young lady in the eye. It went through the cornea and penetrated the lens. I expected that there would be a cataract. The opening healed up and in the course of one or two weeks the opacity disappeared. Vision is normal.

Dr. Lippincott, Pittsburg:—I have seen several cases in which injuries to the lens gave rise to very little permanent trouble. One was that of a young lady, who while chipping off the irregularities from the inside of a piece of pottery was struck with a minute piece of steel from the chisel. The foreign body, which was found lying upon the lens in the centre of the pupillary space, was removed with a Gruening's magnet. The ultimate result was normal vision.

In another case a spicule of copper about the thickness of a No. 5 sewing machine needle and three or four mm. long, had entered the anterior chamber and was found sticking in the lens substance near the edge of the pupil. The splinter was removed with a pair of smooth iris forceps through an incision at the corneal margin. A slight and sharply defined opacity of the lens remains, but fortunately it is not central, and the vision is as good as it was before the accident.

Dr. B. L. Millikin, Cleveland, Ohio:—The point in which I have been particularly interested is in regard to the after treatment, and the effect of atropia in paralyzing the accomodation in getting rid of the action of the ciliary muscle and what influence this has upon the after effects of these injuries. That is a point of a good deal of interest and it seems to me that in some of the cases where the amount of clearing up has been great, the atropia has been of great advantage by the complete rest which it has afforded. The point I wish to emphasize is the effect of absence of the accomodation in clearing up the lens matter after these injuries. Some of these cases have had extensive opacities and within a few days one half of the lens has become opaque. Within two or three weeks or less, the opacities have disappeared almost entirely so that the fundus could be made out. The question is whether or not if the mydriatic had been kept up for several weeks or months, it would not have effected a continuance of the clearing up of the lens, and it might not have remained clear.

EYE INJURIES CONSIDERED IN RELATION TO SYMPATHETIC AFFECTIONS.

Read before the Section of [illegible] Forty-third Annual Meeting of the Ameri[illegible] held at Detroit,

BY T. E. MURRELL, M.D.,

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It is a difficult matter in many cases of recent injury to an eye to foretell the effect it will have on the fellow eye if it be not removed. There are numerous injuries that do not at first appear very serious, and there are good reasons for believing that not only may a good looking globe be preserved, but practical vision as well, which may finally prove very dangerous; while others that seem to doom the eye to sure destruction, as well as endanger the other eye, sometimes take a different course to our surprise.

We have had practical demonstrations of this in cases where our advice to remove the injured eye has met with refusal, and years afterward the person has been found still carrying it without the slightest trouble, much to his boasting and not much to our credit in his conception. Nevertheless, we know the slumbering dangers in these eye injuries that may awake after long years, and our boasting patient may yet come to grief. Injuries that threaten danger to the fellow eye, may be divided into two general classes; those in which a foreign body lodges within the globe, and those in which the globe suffers violence from without.

Every one must at times be struck with the remarkable difference in tolerance of eyes to injuries. and it may be considered a fair rule to estimate the danger to the uninjured eye by the speediness and grade of the reaction in the injured eye. Yet we know that in these violent processes in which the entire uveal tract is speedily involved in suppuration there is less danger of sympathetic trouble than in the less severe and more insidious cases. The eye is peculiarly rebellious to the intrusion of a foreign body, and it is rare that such an occurrence does not only entirely destroy the eye thus entered, but finally leads to sympathetic involvement of the other eye. As is well known some portions of the eye are far more intolerant of the presence of foreign matter than others; this is peculiarly true of the ciliary body and the vitreous.

Just why the vitreous should be so ready to revolt at intrusion is hard to explain since it is not endowed with nerves or blood-vessels, but we know that the tiniest particle of matter lodged in it is almost certain, sooner or later, to be followed by severe reaction. Of course the injury done to other important parts, as iris, lens and ciliary body in its route to the vitreous, is to be considered, since reaction may first set up in them, but in many instances they escape and only the sclera and choroid are penetrated, which readily heal, and the reactionary process afterwards ensues in the vitreous. It is commonly believed at the present day that the reaction is the result of microbic infection introduced with the foreign body, or entering along its track from the conjunctival sac. If this be true, on what principle can we explain the want of reaction and final restoration of normal function with perhaps excellent vision when the foreign body, for instance a bit of steel, has been successfully removed with the electro-magnet? Certainly all the germs are not brought away with the body; and the wound is greatly enlarged to introduce the magnet, thereby increasing the danger of invasion from without. Then again, observation shows that there is some property in the intruding body itself, perhaps of a chemical nature, that determines very largely the tolerance of the eye to its presence. In former years when percussion caps were used many accidents happened to eyes by fragments of the cap being driven into them on explosion. These injuries were singularly fatal, as my earlier experience verified by the necessity of the removal of many such eyes in gunners in the west. Now a piece of cap on the instant of explosion is at a very high temperature, sufficiently so to destroy any germs that might adhere to it, as I have seen severe burns from such a fragment when lodging in the conjunctiva or skin, and it enters the eye therefore aseptic. The same may be said of fragments of steel which oftentimes enter the eye at white heat and are soon followed by the most intense reaction and panophthalmitis. Is the danger to the fellow eye, then due to the transmission through lymph channels of pyogenous germs? This is a matter still in the hands of the pathologist. In the *Archives of Ophthalmology*, January number for this year, Dr. Poplawska reports the examination of twelve panophthalimtic eyes for microbes and found colonies in all, but they were bacilli and not micrococci, the orthodox pus producers. Furthermore they were found, if the foreign body was lodged in the vitreous, developed immediately around it, and were not found in its track through iris, lens, or ciliary body. Nor have they been found in the sympathetically affected eye. But whether or not microbes are the agents by and through which sympathetic ophthalmitis is engendered in some cases, there are many in which they are not and cannot be.

Take the cases of sympathetic inflammation following ten, twenty, and even thirty years after the lodgment of a foreign body in an eye, and how can we explain them on the microbic theory? Certainly these ephemeral germs could not lie so long dormant to be suddenly awakened into activity. The other class of injuries which endanger the fellow eye are those in which some anterior portion of the uveal tract is involved. Any injury by which the iris or ciliary body or both, becomes entangled in a cicatrix and is dragged upon always contains the element of danger to the other eye. How soon or how late, or if ever, this may occur is a matter of conjecture. A cut or rupture in the sclero-corneal junction leaving a cicatrix is a well known menace to the opposite eye, and yet I have seen very ugly and extensive injuries in this region which had not been followed by any sympathetic trouble many years afterward, and yet a small perforating ulcer near the margin of the cornea, into which the iris is dragged, I have known to eventually destroy the opposite eye through sympathetic inflammation. Any entanglement of iris or ciliary body causing traction and more or less constant irritation, is one of the greatest dangers to the integrity of the fellow eye. As has already been said, the most important question to both patient and surgeon in the early stage of a traumatism is as to the possible risk to the fellow eye. How often have we seen a rupture of the globe with prolapse of the vitreous or iris, under careful treatment heal without further trouble? And who will always condemn such an eye in the beginning, especially if no severe reaction is present or imminent?

A case in point will serve to illustrate the responsibilities that devolve upon the surgeon just here.

A colored man came to me just after an accident to his right eye. It had received a blow from a piece of wood causing a transverse rupture in the cornea extending partly into the sclera at the outer side. The iris was entangled in the wound and the pupil was obliterated. Under antisepsis and bandage the wound healed in a few days. At the end of two weeks the eye was clear, there was no tenderness or pain, and he had good light perception in all parts of the field. I decided to make an iridectomy for the purpose of restoring vision, and requested him to call again soon to have it done. Two weeks later he called complaining of pain in the left eye. To my surprise I found a mild plastic iritis. The right eye was now injected, tender to the touch, and had nearly lost light perception. I at once enucleated it, and found a cyclitis starting in the scleral end of the cicatrix. The other eye was carefully treated, and responded at first to atropine, and all looked favorable for a while, but a change for the worse took place after a couple of weeks. and in spite of all treatment it went into an iridocyclitis and the eye was lost. Here was a most rapid and unexpected process. I had in my mind from the first sight of the case the probable danger sometime in the future to the fellow eye, but as there had been no reaction until the wound had thoroughly healed I certainly did not look for so sudden an outbreak of sympathetic ophthalmitis in the other eye. In contrast with this I might mention the case of J. C., a girl aged 11 years, who has a very conspicuous puckered cicatrix extending entirely across the right cornea, and about 6 or

7 millimeters into the sclera on the outer side, the scleral scar being particularly ugly and depressed with entangled ciliary processes in it, and the iris being adherent to the corneal scar in its greater extent. The eye had light perception, and never gave any special annoyance. I found increased tension, however, more marked sometimes than others. Her left eye has had defective vision for several years, since shortly after the accident, viz.: V = 4-200, but she had never complained of pain in it, or photophobia or any other symptom except inability to see well. Ophthalmoscopic examination discovered no abnormality in the eye whatever. As the right eye was useless, and the nature of the injury a dangerous one, I advised its removal. Her father refused, and so I requested that he allow me to make an iridectomy. This he granted, and I accordingly removed a section of the iris. There was no more increased tension after this. I could now examine the anterior of the eye with the ophthalmoscope and found aphakia, cyclitic membranes and floating opacities in the vitreous. The injury was caused by a piece of broken bottle, which, being hurled with considerable force, accidentally struck her on the right eye when she was seven years old. I am of opinion that, unless removed, this eye will eventually cause the loss of the other. What could be the cause of the lowered vision in the uninjured eye?

In another case with an eye affected similarly to this through sympathy, I had the pleasure of seeing vision return after removing the offending eye. There are features in the case sufficiently interesting to warrant reporting it.

S. T., aged 18, who entered the Ark. School for the Blind in Sept. 1890, was subjected to an injury of his left eye when four years old by the penetration of a fragment of steel while standing near an anvil on which two men were hammering a bar of iron. The eye first inflamed and then became quiet, but was blind. He attended school, and had but little trouble until about two years afterwards. At this time the injured eye became quite painful at times, and the other eye grew very weak, so much so that for three years before I saw him he was unable to pursue his studies. When I saw him in September, his condition was as follows: O. D. V. = counts fingers 12 feet, slight photophobia. Ophthalmoscopic examination negative. He stated that his vision had been about the same for three years past. O. S. globe tender to touch, and injected. Diagnosis, chronic panophthalmitis. I at once removed the inflamed eye. Soon after all photophobia disappeared from his right eye, but vision was no better. At the end of a week vision had slightly improved. In a month V. = 16-128, in two months it was 16-32, in four months it was 16-25. The eye had now grown strong and could endure constant work, and he was sent home. I later heard from him saying he had no further trouble in using his eye. In the injured eye was found a small fragment of steel encysted in the vitreous humor near the papilla. The eye was completely disorganized. What was the nature of the sympathetic trouble in this case? The most careful examination failed to reveal any lesion in the fundus of the right, and yet vision was reduced to counting fingers at 12 feet. Another strange feature in the case is the slow but complete return of vision after so long continued reduction of same.

In illustration of the tolerance of the eye to injuries and foreign bodies, I would mention a case I have already reported to this Section where a fragment of glass measuring more than a half inch square lay quiet in the ciliary region of an eye for ten years without any irritation or sympathetic trouble whatever, and the eye was only removed on suspicion of danger to the other eye on account of the extensive cicatricial formations and entanglements of the uveal tract in the sclero-corneal region, without suspecting the presence of the foreign body in the eye. While writing this article, my eye chanced to fall on the title of a paper in the May number of the *Ophthalmic Review*, by E. Treacher Collins, reporting nine eyes removed a very long time after having been entered by a foreign body. The shortest time in which trouble arose after the accident was 14 years, and the longest 28 years, and in three cases, 24, 14, and 28 years, respectively, the eyes were removed on suspicion of the presence of a foreign body without there being any pain or other trouble.

Not one of these cases would have passed through the hands of a modern ophthalmic surgeon shortly after the accident without his urgent advice to remove the eye with the offending body. While this would be sound philosophy, and place the surgeon on the safe side, yet we must recognize the element of uncertainty in every recent eye injury.

Only a few days since, a farmer refused to permit me to remove a very dangerous eye for him on the ground that he had known many one-eyed persons all his life, lost by accident, and had never heard any complaint from them. While I expect my self-wise patient to turn up in sorrow some day, I cannot be positive that he will, and he may for years to come boast of his judgment against mine. With all the uncertainty in one direction there is a certainty in another that outweighs all, and that is: While an injured eye may not affect the other sympathetically, there is in many cases, well established by clinical experience, *very great danger that it will*, and in case the eye is already totally or practically blind, it is a certain safeguard against such an accident to get rid of it, and the surgeon fails of his duty, who would weigh the trifle of looks or sentiment against the all-important question of sight.

THE SURGICAL TREATMENT OF TRACHOMA.

Read in the Section of Ophthalmology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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In the present stage of our knowledge of the treatment of trachoma, surgical procedures accompanied by proper local medication, afford the most efficient and most expeditious means of effecting a radical cure. Surgical interference is not a thing of recent date. Scarification more or less extensive, has been resorted to, for many years.

In the beginning of the present century, after the return of the French troops under Napoleon, from Egypt, this disease assumed such importance and was so widely spread throughout Europe that the minds of all medical men were active in the attempt to devise means for its cure. At one time scarification was quite widely employed apparently for the purpose of local depletion in cases where the hypertrophy of the conjunctiva was marked. From 1812 to 1813 bleeding was extensively practiced in England and Germany for the cure of this as well as of almost all other diseases. The amount of blood taken, running as high as sixty ounces in some cases. Some surgeons bleed from the veins, others from the arteries, each claiming especial advantages for his method. Local bleeding by the means of leeches was advised, eighty to a hundred leeches being employed in some cases. Moxies and blisters were also employed.

In 1811 Rust (London) advised excision of the affected conjuctiva; this was done by Elbe (Stuttgart) in 1839. In 1854 Pilz (Prag) practiced excision of the individual follicles. In 1859 Barilla, an Italian, devised an instrument consisting of a brush made of fine metal wire, which he used for the purpose of brushing out the trachoma follicles. Samelsohn (*Arch. f. Aug. u. Ohrenheilk*, Vol. III, 1873) employed a fine thermo-cautery for the destruction of individual granules, effecting a cure by repeated sittings. Reaction was controlled by cold compresses.

Fieuzal, Fröhlick and Hirschman have also practiced this method. Reich (*Klin. Mtbl. f. Aug.*, 1888, p. 56) has used the galvano-cautery, employing a fine pointed electrode. The thermo-cautery was used by H. Korn (*Berl. Klin. Woch.*, 1870, p. 201) in 1870 in the following manner: a glowing platinum rod was passed over the conjunctival surface much as the crystal of the sulphate of copper would be employed. The globe itself being protected by a Jaeger's plate. A superficial eschar was the result. A partial or complete cure was obtained after three or four sittings. The scars resulting were sometimes very annoying.

The systematic excision of the retro-tarsal fold was first practiced by Galezowski in 1874 since which time it has been employed with more or less modification, by many operators. Galezowski considers the operation to be applicable in all cases where trachoma granules are present in the retro-tarsal folds. His method is as follows: Ether is used in some but not all cases. The lid is everted and one blade of Galezowski's double pointed tooth-forceps is passed to the bottom of the cul-de-sac. The teeth of this blade are engaged in a fold of conjunctiva which is drawn downward and the forceps are closed over it. This gives the operator control of the fornix folds. With a pair of scissors the piece to be excised is marked out and carefully dissected from the underlying tissue. A piece of conjunctiva three to eight mm. wide and as long as the fornix folds is removed. No sutures are employed. The eye is washed with a mild antiseptic solution. A bandage applied and the patient sent into the ward.

Heisrath, Jacobson, Vossius and others excise a portion of the upper part of the tarsus, if the tarsal conjunctiva is involved, along with the fornix folds. Sattler uses sutures to close the wound in some cases. If the plica semilunaris is the seat of granulations, Sattler does not hesitate to excise it. Dr. Sueller (*Arch. f. Oph.*, V. XXXIV, p. 131) devised a clamp forceps which is a modification of Desmarre's forceps, with both blades fenestrated, which he employed for the purpose of engaging the fold of conjunctiva to be excised; after being caught in the forceps the fold was cut off by means of the scissors. He washes the conjunctival surface with sublimate 1-3000 after the operation and dusts iodoform on the denuded surface. A bandage is then applied. This dressing is renewed every day until the wound has healed; about eight days after the operation of excision of the fold, the operators agree in saying that in the majority of cases the remaining granulations gradually grow smaller and disappear. Relapses are infrequent.

Sattler (*Zeitschrift f. Heilk.*, Berl., 1891, p. 45) practices scooping out the contents of the follicles, employing for that purpose a sharp oval curette 2x4 mm. in size. The apex of the granule is scarified and the contents then removed with the curette. This is done in all parts of the conjunctiva, the loose folds being made taut by the use of some such instrument as the forceps of Heinheiser. This instrument (which is double pointed) is so constructed that the distance between the points can be increased after the conjunctiva has been seized. After the operation the conjunctival surface is washed with a solution of sublimate $\frac{1}{1000}$; this is repeated every day until recovery takes place. Swelling is reduced by the application of cold compresses. A number of sittings are necessary to effect a cure.

Electricity in the form of electrolysis has been advocated by G. Lindsay Johnson, of London (*Arch. of Oph.*, Vol. XIX, p. 264), to be used after the following manner: The patient is anæsthetized. The lid is everted over a horn spatula and held in position by a vulcanized double hook. The conjunctiva is then scarified with a three bladed "silonneur" adjusted to cut to the desired depth. The incisions are made parallel to each other and to the margin of the lid, over tarsal and fornix conjunctiva. After the bleeding has abated the grooves are traversed by a double bladed electrode which is connected with six Stoher's carbon and zinc cells. A yellowish, frothy mass exudes as a result of the electrolytic action. After cleansing, the conjunctival surface is dusted with calomel and is subsequently smeared with an ointment of hydronaphthol in vaseline $\frac{1}{800}$; the results are said to be very good.

Since Barelli (1859) devised his metal brush for removing the granules from the conjunctiva other appliances for the same purpose have been brought forward. Fodda (1870) caused an instrument to be constructed consisting of a metal plate set with numerous very fine teeth, arranged in rows, which he termed a "spinatore." Manelescu, of Bucharest, used a stiff, bristle tooth brush cut to $\frac{1}{4}$ in. in length for this purpose. Keyser, of Philadelphia, also employs it. (*Oph. Rec.*, 1891, p. 51.) This method is employed by Arnant (*Annal d'Oculistique*, Jan. and Feb., 1889) for the purpose of introducing a solution of sublimate, 1 to 120 or 1 to 100, into the trachomatous tissue merely and not for brushing out the the granules.

Expression as a surgical procedure in the treatment of trachoma is now widely practiced. I have been informed by an eye witness that Galezowski employed this procedure, in his clinic in 1874, and that he had a special forceps constructed for the purpose. Wolfe (*Diseases and Injuries of the Eye*, London, 1882, p. 51) advises scarifying with Desmare's scarificator and subsequently squeezing out the contents of the follicles with the thumb and fingers. One or two days later he applies a solution of tannin to be used by rubbing it on the conjunctival surface. At the meeting of the Illinois State Medical Society, 1889, Dr. Prince presented a ring forceps which he had devised in the treatment of trachoma. They were used as an adjuvant to other non-surgical methods. Dr. H. D. Noyes introduced a forceps of his own design shortly after those of Prince appeared and he has been followed by Knapp, Gruening and others. The mode of operating with Noyes' forceps is as follows: The patient is etherized, the lid everted and the loose folds of the conjunctiva caught up with the forceps; two pairs are used. A gentle stripping movement is persisted in, the folds being caught by one pair of forceps as the other pair passes off, until all of the trachoma granules have disappeared. The contents of the granules are pressed out and appear on the forceps as pulpy, reddish manes. Noyes' forceps are so constructed that the conjunctiva at the canthi and the semilunar fold can be rapidly reached, which is not the case with the roller or fenestrated forceps. The granules on the tarsal conjunctiva are reached by placing one blade on the tarsal conjunctiva and one in the retro-tarsal fold. The fenestrated forceps are used much in the same manner. Knapp's roller forceps are used, particularly in the treatment of trachoma follicles situated on the tarsus, by placing one blade on the conjunctival and one on the cutaneous surface. By compression the trachoma granules are crushed into the tissue of the tarsus, their contents not being removed. The after treatment as carried out by Noyes and Knapp is mildly antiseptic and astringent.

A method for the surgical treatment of trachoma has recently been developed by Darier, in Abadie's clinic in Paris (*Rec. d'Ophthal.*, Paris, 1890, p. 708) which consists in a combination of a number of methods previously in use. The affected conjunctiva is scarified and subsequently a strong solution of sublimate 1 to 500 is brushed into the tissue by means of a tooth brush. The method is termed "grattage." It has been used extensively in the clinics of Paris and to some extent in New York, with very good results. The surgical procedures employed for the treatment of trachoma have been briefly mentioned. We may now consider their relative value, but before doing so it would be well to consider the indication for treatment.

The outset of trachoma is usuall accompanied by redness of the conjunctiva, some hypertrophy of the membrane and considerable discharge. In certain cases the condition can with difficulty be differentiated from the ordinary conjunctival catarrh. The conjunctiva may assume a thickened velvety appearance, the granulations first becoming visible on subsidence of the swelling and intense hyperæmia. Usally more than one member of the family is affected with this form of trachoma and usually when it occurs in asylums or residental schools many of the inmates are apt to contract the disease. There is a class of cases occurring usually in children of from 5 to 14 years of age, in which on eversion of the lids a mass of pale spawn like granulations is thrown into view, embedded in the slightly hypertrophied conjunctiva. In these cases the annoyance experienced by the patient is slight. There is little secretion. This form of trachoma appears sporadically. It possesses but little of the contagious nature so pronounced in the form where the secretion is copious. The contagiousness of trachoma is probably in direct proportion to the amount of the secretion.

In this early stage, which might be termed the first stage of trachoma, the follicles are discrete. They consist of aggregations of lymph corpuscles, situated immediately beneath the epithelium, having a more or less marked fibro-vascular capsule and traversed by very fine trabeculæ of connective tissue fibers. As the disease progresses the follicles or granules coalesce. This occurs particularly in the upper third of the tarsal conjunctiva, but is not confined to this region.

The conjunctival surface becomes reduced in area, cicatricial patches and bands appear. From friction on the cornea superficial keratitis, deep ulcers and pannus result. This may be termed the second stage. The third stage is essentially one of atrophy, and shows rather the result of trachoma than trachoma itself. The surgical procedures necessary for the correction of the results of trachoma as found in the third stage, will not be considered in this paper, and consequently need no further mention.

The contagious nature of trachoma considered in connection with the facts elicited by Michel, Sattler and others in their bacteriological researches, furnishes very strong evidence of the microphytic origin of the disease. If we accept the above statement as facts, concerning the structure of trachomatous tissue and admit it to be of germ origin, we may easily formulate the general indications for treatment.

1. The obnoxious tissue should be removed if such a thing be possible, without producing too much deformity of the lid.

2. The destruction of the germs instrumental in the production of the disease, should any remain.

3. The after treatment should be so conducted that a smooth surface should result. Procedures that are purely mechanical may fulfill the first indication, but mechanical must be aided by therapeutical measures to fulfill the second and third general indications. It may be claimed that the plasma of the blood is sufficiently germicidal to destroy what trachoma germs may remain after mechanical means have been employed to remove trachomatous tissue. This may have a grain of truth in it, but the fact remains, that after purely mechanical means have been employed, recurrences of trachoma in the operated eyes is not uncommon. It is a fact recognized by all observant surgeons, and demonstrated by laboratory experimentations that bruised or crushed tissue forms a most favorable nidus for the development of microörganisms, therefore it is not only logical, but actually necessary that a germicide be employed after the surgical procedure to render the conditions for recovery most favorable. Recurrences should not occur, since their prevention is fully within our power.

In the first stage of trachoma the method by expression is by far the best to pursue. Since it does not imply loss of conjunctiva it is far better than excision. It is efficient and speedy, therefore better than the destruction of individual follicles by the cautery, removal with the curette, etc. Theoretically, and I believe it must prove so experimentally, it is better to remove the contents of the follicles than to crush them into the tissue. Because of this, I prefer to use Noye's forceps, regarding it as the best forceps made. In the employment of expression, I have found that the removal of the contents of the follicles is facilitated by a superficial scarification of the apices of the elevations, the incisions running parallel to the margin of the lids; I consequently scarify in these cases. After the expression, I am in the habit of introducing a germicide into the bruised tissue, using an ordinary toothbrush for this purpose loaded with a solution of sublimate 1-500 or 1-1000. After the treatment as above described, the patient may be treated as an out patient, but it is better to keep him in the wards of the hospital for a few days. In the latter case a compress bandage should be applied; after twenty-four hours the conjunctival sacs should be washed with a weak sublimate solution. If there is a tendency to puffiness of the lids, the bandage should be reapplied.

Swelling due to traumatism is much more easily controlled by a pressure bandage, and is more comfortable to the patient than are cold applications or medicinal applications of any sort. The tendency to swelling of the lids will have disappeared in thirty-six to forty-eight hours, when the bandage may be removed; but little reaction follows the operation.

To prevent the formation of adhesions between folds of the conjunctiva, it is well to sweep a probe through the conjunctival sacs at intervals of twenty-four hours for a few days after the operation. Mild antiseptic washes and the occasional application of a 1 per cent. solution of the nitrate of silver as recovery advances, will suffice to effect a complete cure without deformity.

This form of treatment which meets all the indications, has proven in my hands to be most satisfactory in the first stage of trachoma; in the second stage of trachoma it may be considerably improved upon. Sclerosed masses of trachomatous tissue will not be squeezed out, consequently if we would cure these patients we must employ other methods. The sclerosed tissue has been cut away by Sattler, and attempts have been made to brush it away by Manolescu. The form of treatment that in my hands has given greatest satisfaction in this class of cases, is that advised by Danier and Abadie. The method is known as "grattage." I have employed it now in quite a large number of cases, and have yet to see a patient on whom I have operated who has not been benefited. The greater number of cases have been virtually cured.

For the performance of the operation I have devised a scarificator and a forceps. The scarificator consists of a handle into which three movable blades are set. The blades are about one inch in length and are placed parallel to each other and about 1-16 of an inch apart. They may be removed for cleaning, at will. A guard to regulate the depths of the incision is supplied with the instrument. The forceps consist of a scissors handle with a catch. The blades are $\frac{2}{16}$ and $\frac{3}{16}$ of an inch wide, respectively. The opposing surfaces are ground in their long axes. The blades are of equal thickness from point to shank, and are $\frac{7}{8}$ of an inch in length. In use the narrow blade is placed on the conjunctival surface, the broad blade on the integument parallel to and at the margin of the lid. Eversion is performed by rolling the lid over the forceps.

The operation is briefly as follows: The patient is anæsthetized. If the palpebral fissure is shortened by cicatricial contraction a free canthotomy is made, the margin of the lid is now seized by the forceps and the lid is forcibly everted. This exposes and puts on the stretch the whole conjunctival surface. The trachomatous tissue is then scarified to about $\frac{2}{3}$ of its depth, the incisions running parallel to the margin of the lid. The surface is then rubbed over with the back of a scalpel or the conjunctiva is manipulated with the trachoma forceps for the removal of the movable trachomatous tissue; after this the conjunctiva is brushed, quite vigorously, with an ordinary tooth brush which carries a solution of the bi-chloride by means of mercury $\frac{1}{500}$. After thoroughly introducing the bi-chloride by means of the brush the canthotomy is converted into a canthoplasty; if permanent enlargement of the palpebral fissure is desired the surface of the conjunctiva is cleansed and a compress bandage applied. The previous remarks regarding traumatic ordena apply here. Severe as the operations may appear the reaction is usually very slight. The after treatment is very important. It consists in preventing adhesions between folds of conjunctiva by occasionally sweeping a probe through the conjunctival sacs and by the application of antiseptic and astringent solutions as required. It is customary to apply a solution of sublimate $\frac{1}{500}$ to the conjunctival surface every twenty-four hours for from three to eight days after the operation. Bathing with a solution of boric acid 3 per cent. two or three times daily and the application of astringents as required. The treatment may produce the result desired in three weeks—it may require three months, however. A satisfactory result is the reward in almost every case which cannot be hoped for in other cases by other methods of treatment. Nellie Lynes, N. Y., aged 28 years, came to my office on March 19, 1892. She had suffered from trachoma of the conjunctiva of the left eye for three years. The patient has been under the care of Dr. D. B. St. John Roosa for about two years having been an inmate of the Manhattan Eye & Ear Hospital for three weeks. About two months before seeing me she had been operated upon by the roller forceps by Dr. Herman Knapp. When first seen the conjunctiva was rough, there were distinct trachoma follicles in the tarsal conjunctiva and a few in the retro-tarsal folds. There was superficial keratitis and vascular pannus with narrowing of the palpebral fissure, intense photophobia and profuse lachrymation. I advised the treatment described above. The patient was admitted to the New York Eye & Ear Infirmary on my service and the operation was performed on March 22. At the end of two weeks the patient was discharged with the lids much improved; there was still some roughness.

The pannus and superficial keratitis were much improved. She has since been treated as an out patient at my office, coming twice or three times a week. When seen last, June 2d, the lids were smooth, the cornea free from ulceration, no photophobia. Patient experiences no discomfort. She has resumed her position and is virtually cured.

The presence of corneal ulcers or pannus was marked; using the galvano-cautery for the purpose the pannus was favorably affected by this procedure but was not entirely done away with.

I wish to emphasize the necessity of careful and persistent after treatment; without it failures will result and the operation will not meet with the favor that it deserves.

Experience has led me to the following conclusions, viz: *a.* In the first stage of trachoma the most efficient mode of surgical interference is that of expression combined with superficial scarification and the introduction of a germicide by the use of a brush. *b.* In the second stage, where surgical interference is advisable the treatment known as "grattage" combined with expression in some cases. Canthotomy or canthoplasty if necessary, gives the most satisfactory results. *c.* The operations as above advised convert a contagious into a non-contagious condition and the patient may be admitted to wards for ordinary surgical cases, without fear of infection.[1]

Discussion.

Dr. L. H. Taylor, Wilkesbarre:—During the past two years I have had considerable experience with the operation of expression. I happened to be in New York three years ago, and saw a patient operated on by Dr. Noyes. Immediately afterwards I secured a pair of his forceps, and soon afterward I operated on a patient whom I had been treating for more than six months with very little benefit. I recently had occasion to see this patient again. The operation was done two years ago, when the patient was 16 years of age. She has since remained entirely well. Since that time I have operated on quite a number of patients, to a limited extent with cocaine, but this is very painful, and I think that the patient should be etherized. I think, in regard to what has been said, that it is possibly not so much the method as the thoroughness with which it is done, and the kind of a case upon which we operate. Many of the cases of hard, dry trachoma are, in my judgment, not suited for the operation. It is rather cases of the follicular type in which the soft matter can be expressed. I have seen considerable reaction in some cases, but nothing serious. The after-treatment has been kept up for some time. This has consisted in the use of astringent and antiseptic applications.

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[1] For some of the data relating to the history of the surgical treatment of trachoma, I am indebted to Sattler, Zeitschrift f. Heil., Berl., '91, p. 45. For record of cases and further discussion see Weeks, N. Y. Medical Journal, October 24, 1891.

Dr. H. V. Würdemann, Milwaukee:—In the State of Wisconsin we have a large foreign element, and hence our surgeons seem to see an undue proportion of cases of trachoma. Hardly a week passes in my private practice without an operation for trachoma, usually by expression or by the method of Sattler, and occasionally by the use of the fine galvano-cautery point. After that I use sublimate and other medicinal treatment, massage by boric acid, etc. After this, if necessary, I use blue stone. I do not consider the case fully cured until it has been under observation for six months; that is, in follicular trachoma. In lymphatic trachoma we frequently are obliged to operate several times, and I don't consider it advisable to promise but one operation, or permanent cure without months of subsequent treatment. After surgical treatment we do not see so much scar formation as after cases treated entirely by blue stone.

Dr. F. C. Hotz, Chicago:—It is pleasing for one who has advocated for many years the mechanical treatment of trachoma, to see that the method has gained many friends. Six years ago, I recommended in the *Archives of Ophthalmology* the method of expelling the trachoma follicles by pressure, and at that time, as far as I could learn by researches, this mechanical treatment had been practiced by very few oculists.

The method to be employed is a matter for individual choice. It makes little difference what method is adopted, provided it is done gently and thoroughly. I believe in the principle always to use the simplest means for accomplishing your purpose. I therefore do not employ specially constructed instruments if I can achieve the same thing as well with my fingers, and the evacuation of trachoma bodies in the upper lid can thoroughly and quickly be accomplished by pressure with the fingers properly applied. I turn the lid and hold it everted with the forefinger of one hand, and run the thumb or the forefinger of the other hand up under the lid to the end of the retrotarsal fold. The lid is thus placed between two fingers, and when these now are gently pressing toward each other, and at the same time are gliding down toward the lower edge of the everted lid, any follicles caught between this finger-press are thoroughly squeezed out.

That is the simplest method, and can be done at any time, because you always have your instruments with you. Of course it is difficult in this way to reach follicles near the angles of the lids. To reach these recesses, forceps of one kind or another are very convenient. I am not particular what kind you employ. I have adopted a pair of forceps after the pattern of the old-fashioned long curved iris forceps, and they answer the purpose better than any ring or roller forceps. In the lower lid, where we often have a long fold of infiltration, we can remove the contents readily with the forceps. Thoroughness and gentleness are most important, and it is surprising how little reaction is seen after the procedure. That one application, no matter by which method, will be sufficient, no one will claim; and treatment of the lid for some time is always necessary to insure permanent results. Of all the operative treatment, the squeezing method is, in my opinion, the best and the gentlest. Scrubbing the eye with a tooth brush, I think is too barbarous and brutal a procedure to be admitted. The excision of a portion of the conjunctiva is a very quick way of getting rid of the diseased conjunctiva, but the treatment is worse than the disease. It resembles the attempt to relieve a person permanently of a corn by amputating the toe; for if you remove the conjunctiva there is no soil left for the trachoma to grow in.

The mechanical treatment avoids the shrinkage of the conjunctiva and the destruction of the membrane by atrophy, and it saves to its full extent the retrotarsal fold, which in the movements of the eyeball plays an important *rôle*. When shrinkage takes place, the eye is embarrassed in its movements, and mechanical irritation is set up by the shortness of the fold, which does not allow the eyeball sufficient freedom of motion.

Dr. H. Knapp, New York:—I have treated a good many cases in this way, and have used different instruments. I have used the instrument of Dr. Prince, and also that of Dr. Noyes. I could succeed with either, but not without a good deal of laceration of the conjunctiva. I therefore devised the roller forceps, and since then, the more I have used it the better satisfied I have been with it. Dr. Weeks says that the follicles are crushed and not expressed. All the material which is held between the rollers comes out in globules or as a viscid fluid. That is just what insures success. The granules in the inferior as well as those in the superior retrotarsal fold are readily pressed out. Be the lids never so studded, the follicles can mostly be removed cleanly and the case cured in one sitting. I can prove this by dozens of cases. The operation requires ten minutes or more. All the granules come out, and there is nothing left but completely clean mucous membrane, over which the roller passes without resistance. When this condition in follicular trachoma is reached, we may be sure that nine cases out of ten are cured, and we need use no antiseptic. This method causes less traumatism, and can be done with greater thoroughness, than any other that I have seen. There is no method that is free from relapses. If these relapses come under treatment early, a few touchings with blue stone mostly afford prompt relief. A permanent cure is more likely to be secured when the squeezing is followed by four, five or six weeks of sulphate of copper treatment. A perfectly healthy mucous membrane, with very little cicatrization, is obtained. That all cases are cured without relapse, I do not pretend. Five or six cases out of 250 have come back to me with relapse, and I had to repeat the squeezing. These were very bad cases, but all cured by the second operation.

Concerning antiseptics, I am not sure that our bacteriological researches in regard to trachoma are perfect. They are not sufficient to demonstrate that trachoma in all cases is a bacterial or contagious disease. There are a number of cases where there is not a particle of irritation, and where the patient is not aware of the trouble until we turn the lids and find the retrotarsal folds studded with granules. There has never been any pain, heat, or discharge. The granules are like lymph follicles. It is not considered as demonstrated that any particular or specific microbe is the cause of trachoma.

On the other hand, we are well aware that trachoma is the consequence, or follows in the wake of inflammatory diseases of the conjunctiva. The contagiousness of such cases is unquestioned.

As regards the therapeutic effect of the mechanical treatment, and especially the method of squeezing out the trachomatous material, I can say that it has proved a great blessing in my practice. It shortens the treatment very much, and in a number of cases it effects a cure in one sitting without other treatment. Next to cataract, I think that trachoma is the most important of the diseases of the eye. In regard to diffuse and cicatricial trachoma, my results have not been satisfactory.

Dr. J. E. Weeks, New York:—In regard to the action of the roller forceps, the construction of the roller and its application to the surface of the conjunctiva, certainly implies that the tissues between the rollers must be crushed, and where there is sufficient tissue left between the rollers to permit of the retention of the subconjunctival tissue, a greater amount of trachomatous material must remain than where simple squeezing is employed. I have seen more recurrences after the use of the roller forceps than after the use of the forceps devised by Dr Noyes, and I think that the mechanical principles involved in the construction of the two instruments are certainly in favor of the forceps of Dr. Noyes.

In regard to the use of antiseptics, while I have not maintained that trachoma has been *proven* to be due to germs, I have suggested that the researches that have been made, and the history of the disease, are such that we may consider it more logically to be of microphytic origin than due to any other cause. We have here an affection which, in the majority of cases, has seemed to me to be contagious. We find that where trachoma occurs in one member of a family, it usually affects a number. Where it occurs in residential schools a number of scholars, as a rule, are attacked. If this does not point to contagion I do not know what does.

Dr. Knapp:—How about trachoma confined to one eye?

Dr. Weeks:—We have gonorrhœal conjunctivitis, a disease known to be of microphytic origin and also contagious, confined to one eye—this is also, not infrequently, the case in epidemic catarrhal conjunctivitis. Trachoma confined to one eye is exceptional, and does not afford the slightest evidence against its contagious nature. If the disease is contagious, it is logical to use an antiseptic (I have been informed that Dr. Knapp himself uses an antiseptic in the treatment of trachoma). It seems to me that in this way we may prevent recurrences that otherwise would take place.

I have seen a good deal of the treatment with blue stone, and can remember only a few cases where a cure was effected. Relapses are the rule, and the treatment of the relapse by a few applications of blue stone does not suffice to cure it. It is exceptional to find a radical cure follow the use of blue stone. Experiments with a pure culture of the staphylococcus aureus made by myself in Knapp's laboratory, demonstrated that blue stone is not a germicide. It is therefore a simple irritant, and increases the vascularity of the conjunctiva. Even if it can be shown that "dozens of cases" are cured by expression alone without an antiseptic or after-treatment, that is no proof, and is no argument against the use of a germicide. If only a few relapses occur, a germicide should be employed to endeavor to prevent all recurrences.

CLINICAL HISTORY OF A CASE OF SUCCESSFUL EXTRACTION OF A PIECE OF STEEL FROM AN IRIS AND LENS BY AN IRIDECTOMY, WITH SUBSEQUENT ABSORPTION OF THE LENS AND RECOVERY OF NORMAL VISION.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY CHARLES A. OLIVER, M.D.,
ATTENDING SURGEON TO WILLS' EYE HOSPITAL; OPHTHALMIC SURGEON TO THE PRESBYTERIAN HOSPITAL, ETC., PHILADELPHIA.

On the second day of March, 1891, H. M., æt. 29 years, a blacksmith, came to Wills' Eye Hospital, complaining that his right eye had become inflamed from the supposed lodgment of some foreign substance in the cornea one day previously. Attempts at extraction had made the eye very painful, which was relieved by the use of a weak infusion of tea leaves. Two years previously, the same eye had been struck by a piece of steel measuring roughly about 4 millimetres square, the foreign body not penetrating the eye, though leaving the organ irritated for several days' time. Vision was in no way subsequently disturbed, and the organ had never become troublesome up to the time of the second accident.

At the time of the first examination, a small mass of foreign substance was found imbedded in the upper inner quadrant of the cornea, about 3 millimetres above the horizontal meridian, and in an almost identical position in the underlying iris, there was a round black bead about the size of the head of a small pin, from the upper part of which could be seen, by strong oblique illumination, a line of metallic-like lustre. A faint deposit of precipitates on the membrane of Descemet, with slight pericorneal injection, existed, though there was no evidence of any ciliary tenderness. Vision with this eye had fallen to slightly less than one-eighth (5-40?), and the accommodative range was limited to the reading of type 0.75 D. from 13 to 30 centimetres. Through the undilated pupil, the eyeground could be fairly seen, it appearing healthy. No abnormality could be seen in the left eye, its vision being one and one-half (5-7½), and the accommodative range extending from 13 to 36 centimetres for 0.50 D. type.

The foreign substance was removed from the cornea, and upon consultation with Dr. Wm. F. Norris, an immediate iridectomy, including the piece of supposed metal, was advised; the latter procedure, however, the patient refused to accept. Upon this decision, a soothing collyrium of boric acid and a Liebreich bandage were ordered, with a request that he should report in the morning.

Upon the following day the patient returned to the hospital, stating to the resident surgeon, Dr. Zimmerman, that an exacerbation of pain in the eye during the night, had decided his willingness to return for operation. He was immediately put to bed, bowels were purged, eyes bathed freely, and he was kept quiet until the next clinic day (March 4), when upon reëxamination, the anterior chamber was found somewhat shallow, and the lens was slightly swollen and becoming opaque in the position of the situation of the foreign body. At this time, the iris tissue in the vicinity of the traumatism was noted as muddy in appearance, with the formation of a synechia at the upper pupillary edge, the ciliary region being slightly tender to the touch. In spite of these inflammatory conditions, a narrow incision with an angular keratome was made at a position in the cornea just inside of the limbus, corresponding with that of the foreign body, and an iris forceps passed in and the object (a flat piece of steel of about 1 millimetre in diameter), with the surrounding bruised and inflamed iris tissue, grasped, brought out and excised—making a clean iridectomy. The lens area exposed to view showed the point of the original wounding of the capsule, with the situation of the greatest amount of swelling and opacity. Atropine and a light pressure bandage were applied, and the internal administration of small tri-daily doses of calomel, with rest in bed, was enjoined. In two days' time, the wound in the cornea had healed, the inflammatory symptoms had greatly subsided, and the lens matter had begun to rapidly absorb, until on the 18th of the month, there was but one plug of lens material to be seen, this being situated in the lower portion of the anterior chamber. Eleven days later, the remaining lens mass had disappeared, the eye was quiet, and vision could be brought to almost normal by the use of a + S. 11 D. lens.

At the present time, about fifteen months after the accident, there is a perfectly quiet eye, with a narrow coloboma up and in; an eye which, in spite of a few fine linear folds of capsule at the lower inner border of the pupil, which can be barely recognized during moderate pupillary dilatation, and a faint concentric ring of lens and capsular débris, which can only be seen at the periphery of the coloboma, possesses normal acuity of both central and excentric vision, the patient possessing an acuity of 5-5 with + S. 11. D. ⊃ + C. 0.50 D. ax. 100°, and reading many words of type 0.25. D. fluently at 8 inches distance with an additional convex lens of 4 diopters strength.

The case is interesting upon account of the immediate curative effects of an iridectomy which removed an offending substance and its bed of bruised and inflamed iris tissue, thus allowing a free, rapid swelling and disintegration of lens matter to uninterruptedly take place during a watchful and careful after-treatment; this immediate happy result being supplemented by a subsequent restoration of vision to full acuity, with but little necessary correction of astigmatism, in a comfortable and unirritated organ.

The Bicycle in Medicine.—Dr. W. H. Burr, of Wilmington, in *Merck's Bulletin*, observes concerning the treatment of tuberculosis that it is irrational to fill the patient with drugs, if no attempt is made to change the environment in which the disease was contracted. His system should be "flooded with oxygen" as a prime requisite to a reformed metabolism—while at the same time the excretory organs are not overlooked. "The bicycle," says Dr. Brown, "in my opinion is one of the most advantageous means of administering oxygen. The bicycle will digest more fat meat and starchy vegetables than any other means of exercise known." The late Dr. Frank H. Hamilton was fond of saying that "the best thing for the insides of a man is the outside of a horse," but he was of that generation, now nearly passed away, that was unacquainted with the wheel in its newer forms and those that are best adapted to the open air occupation of invalids. Thousands of persons can have bicycles to whom the living steed is out of the question. And the proprietorship of a horse is not an unalloyed privilege, since too much exercise may at times be unavoidable through considerations affecting the servant-animal, but the bicycle can be stopped and made to rest at the will of its owner. Dr. Burr concludes his observations by saying: "The latest theory in the treatment of tuberculosis is rest. I prefer to say: Action with rest—as the unpleasant necessary concomitant—but which should be gradually, steadily and progressively abridged." Mr. Gladstone is an ardent admirer of this most rational means of physical betterment. He is reported to have said recently, in an interview: "I can only emphasize the fact that I consider that physically, morally and socially, the benefits that cycling confers on the men of the present day are almost unbounded."

Colored Morphine.—It has been proposed by a German physician that morphine be always stained a bright red with aniline, in order to diminish as far as possible mistakes in compounding.

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SATURDAY, SEPTEMBER 3, 1892.

THE TURKISH BATH.

DAVID URQUHART, an enthusiastic Englishman, was the foremost promoter of the hot air bath, named by him the Turkish bath, which is daily challenging the attention of the medical man. Its increasing popularity among the laity calls for thoughtful action by the profession. If it is to be permanently identified with the life of our people there will necessarily be much in it of great practical interest to the scientific physician. Hot air as a therapeutic measure is older than the time of HIPPOCRATES, who identified himself with its use. During the prosperous times of the Roman Empire it became one of the most popular institutions of the day. The many ruins now standing throughout what were but provinces of Rome, attest its extensive employment at that time.

No new theory is propounded, on the contrary, this is what has been known, though imperfectly practiced, for centuries. Air and water and temperature are the most salutary and unfailing agents for the correction or alleviation of the numerous derangements to which life is exposed.

In the hands of its modern advocates the Turkish bath has met with varying fortunes, according to the skill or merit of its promoters, and it is most desirable that the scientific mind should rescue it from whatever pertains to charlatanry. Its use as a therapeutic measure naturally comes within the province of the medical profession, and if there follows even a fraction of the benefit claimed by its enthusiastic advocates, the community will have occasion to be thankful.

Its action in rheumatism and some of the neuroses, as well as blood poisoning, has been marked by many successes. But the larger field for this bath will probably come in the line of preventive medicine. It does prove of service as a means of rest to those who are suffering from the every day pressure of overwork. There is little doubt that our people will gradually become educated to the legitimate use of this bath, and that it will ultimately be largely adopted by them as a habit. It will supply a much needed want, by increasing our sanitary resources, helping to lift all to a higher plane of health, and the physician to a higher standard of work. A most desirable and convincing method of promptly testing this would be by placing a well equipped Turkish bath, in charge of one conversant with it, in some of our asylums and hospitals. It is a lamentable fact that bathing facilities in these institutions are as a rule of the rudest and most undesirable kind.

It is well to guard against any immature conclusions. At the same time, those who have experienced the feeling of vigor and elasticity arising from the use of this bath will be inclined to pardon the enthusiasm of its votaries. Opportunity, tests, and time will surely reveal all its lasting virtues, and it is always wise to range ourselves on the side of cleanliness and purity. It was DR. ANDREW COMBE who said, "We ought to extend the hand of welcome to every man who is able to correct an established error, or add a new truth to the existing store; and much more so, if the offered contribution should be of that new and important principle capable, if true, of modifying and improving the whole field of medical practice."

There is a moral obligation resting on all who have intelligence and opportunity, to become acquainted with the laws of health, and live in obedience to them, and also to gain a knowledge of the simple and natural agencies by which deviations from the normal standard can be corrected. When once this knowledge becomes general, there will be a vastly smaller field for any form of quackery, and the too general use of patent medicines will be dispensed with. None are better qualified than medical men to lead in such a reform.

NON-NARCOTIC TREATMENT OF DELIRIUM TREMENS.

DR. NORMAN KERR made some remarks at the Nottingham meeting of the British Medical Association, in favor of the use of the liquor ammoniæ acetatis, to the exclusion of all narcotics, in delirium tremens. He stated that he now relied, even in the graver forms of the trouble, on drachm doses of that remedy, given every hour. Milk, beef juice, broth and coffee are frequently administered. In the case of a publican, in his third seizure, rendered especially serious by an intercurrent eplosion of epilepsy, this treatment resulted in sleep at the end of seventy hours. This sleep lasted four hours, after which there was a period of wakefulness for four hours more, and then a long sleep of twenty hours. The subsequent recovery was more rapid than from his second attack, which had been treated with opium and bromides: in that seizure even after a forced narcotic sleep the man was so violent that four men were needed to control him, and in order to save his life he was put in the padded room of the nearest workhouse.

These two attack, says DR. KERR, as quoted in the *Medical Press and Circular* for August 10, were typical examples of the graver form of delirium from alcoholic saturation. The compared results of the two different plans of treatment bespeak a reliance on a safe sudorific like the liquor ammoniæ acetatis and suitable nourishment, as best fulfilling the conditions of cure; the main point being, in his opinion, the avoidance of all alcoholic stimulants and all narcotics. "The best hope of cure lay in natural exhaustion inducing sound refreshing sleep." While this state persists the *vis medicatrix naturæ* is given a fair field to accelerate the elimination of the accumulated alcohol.

"THE BRABAZON WORK."

By this name is understood to be indicated those plans of employing the insane and other non-valid dependents of the State. The *Charities' Record* contains some of the newest facts regarding this means of adding to the welfare of the inmates of poorhouses—not the able-bodied, but the infirm. Some time ago we published in these columns an account of the "Brabazon Employment Scheme" in vogue in some of the English workhouses, and later a letter from a lady in Philadelphia telling of what is being done at the Blockley Asylum for the employment of the insane. A committee of the Central Association has been formed to take up this work in the State and already something has been done. The inmates of the epileptic pavilion on Blackwell's Island, New York City, have been instructed in needle-work of various kinds and under this instruction have made a number of articles from materials furnished them, whereas heretofore their time has been almost entirely spent in idleness. The Richmond County Committee, which is doing so much intelligent and helpful work, sends the following report: "The Brabazon Work has been started and has given occupation and pleasure to several of the inmates; floor-cloths and mats have been made and sold, a small percentage on each article being paid to the inmate who worked it, and she gives it to the matron to spend for her. The rest goes toward a fund for buying material."

The *Record* then quotes the following paragraphs, from a recent article, which might find corroboration in the experience of hundreds of physicians: "The fact of doing work which has a value, however slight, is a fact full of high suggestion to our worker. To have learned to sew the plainest seam well, or to thread a needle; to have learned to drive a saw or swing an axe effectively and with economy of strength, or to pile a range of wood intelligently, is to many a cramped, debased life not less than is the acquisition of the technic of his profession to the sculptor or the musician.

"With the discipline of work rightly directed, comes 'feeling for good work,' the perception of order and form and beauty, the quickening of moral sense, the turning of desire toward that which is above. From the lowest detail of handwork an upward way opens and invites the soul to rise in it."

These results of work, well performed, are true to the point of being a truism—they may be the physiological effects of the tenth sense, "the sense for good work."

CHOLERA.

Since our last issue cholera has spread with even more than usual rapidity. In Europe it is no longer confined to the seaports of Havre, Hamburg and St. Petersburg, but is also in Berlin, Antwerp, Liverpool, London and at other points in England.

In Great Britain but little dependence seems to be placed in quarantine measures for the effectual stoppage of the introduction of the disease. The sanitary officials relying more upon a good sanitary condition of the cities and towns, hoping thereby, to ameliorate the force of the epidemic, which seemed certain to evade all quarantine barriers that might be erected against its invasion.

In our own country the National Government has established strict quarantine stations at all ports of entry, and has done everything possible in that way, except to suspend immigration. This has been urged by the Michigan State Board of Health, and although the measure is extreme, the existing conditions are such as to warrant its adoption. There is no doubt as to the supreme value of quarantine measures, but to be effectual against the introduction of so infectious a disease as cholera, these measures must approach conditions of complete isolation.

State, city and village health boards are all active in bringing about a most desirable condition of public cleanliness.

Native Americans are generally pretty well informed in regard to correct rules of diet and living, but we have an enormous population of recently arrived immigrants, many of whom are of the lowest grade of intelligence. All their lives accustomed to the most unsavory conditions, ignorant of the common laws of health and disease, they naturally congregate in the large cities, and crowd into the vilest of tenements, where they constitute ready receptacles for any infectious disease.

Our country can well afford to suspend immigration for several months. If a cholera epidemic will show to our National Congress that for altogether too long a period this country has been an indiscriminate and dangerous dumping ground for the slums of European and Asiatic countries, it will not be an unmixed evil.

There is a brotherhood of man which says we are our brother's keeper, at the same time in the brotherhood of Nations it may become our duty to instruct Kings, Emperors and Princes that it is their duty to provide for those of their own households and dominion, and to do it in their own country.

Medical Educational Requirements in the United States.—Since the adoption, by a majority of the colleges in the United States, of a minimum standard of requirement embracing three courses of graded instruction, of not less than six months each, and a standard of preliminary educational training of all medical students, the question of recognition of graduates of those schools which do not observe this standard, has been practically settled by the American Medical Association. At Detroit, on Thursday morning, June 9, 1892, a preamble setting forth the requirements of the Association of American Medical Colleges, and a resolution demanding of all the colleges in the United States the adoption and observance of a standard which shall not fall below the minimum requirements of the College Association, were unanimously adopted, and the Secretary directed to forward a certified copy to the Faculties of all the colleges, and to each medical journal.

It is clearly apparent from this action, and from the recent action of many of the State Societies, that graduates, after July 1, 1892, from colleges which disregard this mandatory action of the American Medical Association, cannot be recognized as regular physicians, inasmuch as they have not passed through the required course of educational training. Societies, therefore, otherwise entitled to representation in the American Medical Association cannot, if they admit such persons to membership, be longer entitled to send delegates to the National body. Colleges disobeying the resolutions of the American Medical Association clearly put themselves beyond recognition, and it is likely that the members of their Faculties will be refused the right to register in the National body, either as permanent members or delegates.

Revision of the Code of Ethics.—For sometime it has seemed desirable to reorganize the National Association on a plan similar to that of our general government, so that every State and County Society in the United States with their individual members would become component parts of the great central organization and brought into closer relations with and more earnest support of it than seems to be attained by the plan now in vogue.

If some feasible means be suggested whereby this will be accomplished, there can be but little doubt of the more rapid growth and greater strength of the Association. The suggestion which the Journal puts forth now is that the Association be so reorganized as to bear the same relation to the State Societies and their subordinate county or local Societies that the national government bears to the several States that compose the Union, with the proviso that each State shall be in its medical organization as it is politically, sovereign, and have the right to make its own laws and code of ethics to suit the varied conditions of the medical profession as they exist in each of the States.

In a country so vast and varied as ours, with its dissimilarity of medical population as much as in other respects, it may not be possible to promulgate a general code that shall be applicable in all the States.

The State of New York, with its cosmopolitan population from all the quarters of the globe, its immense hospitals, great schools, private sanitariums, dispensaries and clinics, with medical laws and medical men as varied, may not find it possible to conform to a law that is applicable in Arkansas, where there are no large cities, few specialists, one medical school, no private sanitariums, etc., etc.; without a State Board of Health and having one of the vilest medical laws *that ever disgraced the statute book of a State.*

Or, maybe, Alabama, with the whole medical act administered through the machinery of her State Society, cannot find it consistent to say that her *regular* physicians shall not consult with those who, though technically *irregular*, have nevertheless been by the agents of her State Society licensed to practice medicine. In Alabama it would be embarrassing to a member of a board of examiners to have to refuse to consult with one whose license bore his signature attesting the ability of its holder to practice medicine.

There are no two States in the Union having the same medical laws, and the same conditions of the medical profession do not exist in any two of them. Then why not let each State Medical Society adopt its own organic law and code of ethics, which shall be subject to the approval or rejection of the American Medical Association just as each State is admitted to the Union by an act of Congress enabling it to call a convention and adopt a Constitution which shall conform to the requirements of the Constitution of the United States.—*Jour. Ark. Med. Society.*

ASIATIC CHOLERA IN EUROPE AND AMERICA.

We are indebted to the Tennessee *State Board of Health Bulletin* for the following concise account of the various epidemics of Asiatic cholera and their course:

In view of the extensive and steady spread of cholera in the Russian Empire, and of the great uneasiness manifested both in Europe and America as to its becoming, as in former years, a pan-epidemic, we give in this *Bulletin* memoranda connected with its past history. All sections of Tennessee have been visited by this disease at different dates from 1833 to 1873, inclusive. By observation or by tradition all our people are more or less familiar with it. In a subsequent number we hope to give an outline of its history in Tennessee.

One broad fact appears in lucid brightness. The mystery that once enveloped the plague no longer exists. It need not get into the Union or into Tennessee. If from culpable oversight, carelessness or penuriousness it does get over the lines, it need not spread. Isolation, sanitation, disinfection, humane care are the safeguards. Money will secure all these. The public can well afford to furnish all that is wanted for this purpose, since the return is truly a hundred fold.

1629.—Bontius, a Dutch physician at Batavia, described the disease and first made it known to the medical profession in Europe.

1817.—It raged with great violence at Jessore, from whence it spread, not very swiftly, but with great certainty, in all directions.

1818.—By August it had reached Bombay. Thence it traveled through Arabia, Persia, Mesopotamia, Syria, etc., on its westward course, and, continuing to extend itself eastwardly from its place of origin. invaded the Burmese Empire, Siam, Java, China, and other populous countries of that portion of the earth.

1823.—It appeared at Orenburg and Astrachan, on the eastern frontier of Russia.

1828.—Remained here until this year, when it increased in violence, attacking a tenth of the inhabitants of the province of Orenburg, proving fatal to a fourth of those affected.

1830.—Reappeared at Astrachan. In less than a month 4,000 persons died of it in that city, and over 21,000 in the province.

1831, June 26.—Appeared at St. Petersburg, having ascended the Volga and destroyed thousands in Moscow. From Astrachan it also diverged along the northern coast of the Black Sea, and thence spread into Austria, Poland, Prussia and Northern Germany.

1831.—In August it was conveyed to Cairo by a caravan from Mecca. Over 15,000 died of it.

1831, October 26 —It appeared for the first time in England at Sunderland, from whence it spread slowly through the northern part of England and into Scotland.

1832, February 14 —It broke out in London.

1832, June 8.—The cholera broke out at Quebec, its first appearance in America. Two days afterward it was in Montreal.

1832, June 24.—New York was attacked. From thence it spread to Albany, Philadelphia, Cincinnati, New Orleans, etc. In New York it reached its height on the 21st of July.

1836.—It lingered in the United States for four years, and then entirely ceased. This first epidemic of cholera cost Great Britain and Ireland 40,000 lives out of 116,000 persons attacked. In the cities of Quebec, Montreal, New York and Philadelphia, embracing then about 450,000 inhabitants, there were over 18,000 cases and 8,000 deaths. In India it remained endemic. Other Asiatic countries also suffered severely.

1846.—It appeared at Kurrachee early this year, near the mouth of the Indus, with terrific violence. Thence to Teheran, capital of Persia. Here its severity was such that 300 perished daily for several weeks in a population of not more than 60,000.

1847 and 1848.—Cholera ravaged parts of Russia and Turkey, having entered Eurrpe by almost the identical route as before. It traveled. however, with much greater rapidity.

1848.—In the autumn it appeared in France and Great Britain, revisiting during the next eight months with almost unerring certainty every place in which it had appeared in 1832-33, and seeking out the same filthy lanes and undrained sections of the cities where it had then committed its greatest ravages. It was even more malignant than in its previous visit. In England and Wales it carried off 53,293 persons.

1848, December 4.—The ship New York, from Havre, arrived at Staten Island with cholera among her passengers.

1849.—It occurred in New York. The whole number of cases reported outside the hospitals in fifty-two days were 2,631, of which 915 died. Also in New Orleans, and spread over the greater part of the Eastern and Western States.

1850.—In New Orleans deaths from cholera May to December, inclusive, 824. Cases occurred as late as February 15, 1851.

1850.—At Cincinnati, from June 1 to August 15, 1,400 deaths from cholera. At Columbus, Ohio, from the 24th of July to August 25, 195 deaths from cholera—a great mortality for the population.

1851.—A second visitation at Cincinnati. Some 200 deaths, mainly in July.

1851.—From April to August, inclusive, 766 deaths from cholera in St. Louis. Total for the year, 847.

1852, May, June and July.—Numerous cases in Cincinnati.

1852.—Total deaths in St. Louis for the year 789, of which 508 in June and July.

1854.—Cholera as virulent in St. Louis as it was in 1849. Total deaths 1,534, mainly in May, June, July and August.

1855.—Disappeared from the United States.

1853, 1854.—Prevailed in Great Britain,

1855, 1856.—The allied armies in the Crimea suffered intensely.

1865-1874.—Cholera persisted in Europe about ten years.

1865.—In the beginning of May it broke out with terrible fury among the pilgrims at Mecca. On the 10th or 11th of May the first death occurred at Alexandria. In June it had reached Cairo. On the 3d of July at Constantinople, where it produced a terrible panic. From Alexandria a steamer conveyed it to Marseilles. From thence travelers carried it to Paris.

1865, September.—Several cases at Southampton, England. Did not spread.

1865, November 3.—Steamship Atalanta came into the lower bay of New York with 400 German immigrants, and cholera. Precautions taken; no spread.

1866, July 7.—At Ancona in Italy, from Alexandria.

1865.—Great epidemic at Valencia, in Spain. Thirty-one out of forty-nine provinces in Spain were ravaged from July till the close of the year. It extended also into Portugal.

1866.—Cholera was early reproduced in almost all the localities it had visited in 1865. It extended northward as far as St. Petersburgh. It appeared in several localities in Bavaria, Saxony and Prussia, also in Belgium and Holland. It still existed in Paris and extended to the northwest of France.

1866.—An epidemic in Liverpool from July 22, to the end of November carried off 1 792 victims. In London for the four weeks ending August the 4th, the deaths were 63,481, 1,097, 1,178. More or less diffused over England during the summer.

1866.—It broke out in New York about the beginning of May, and gradually spread over the country, following the lines of travel. Prevailed extensively in the United States army, causing over 1,200 deaths among officers and men. During summer and fall prevailed extensively at New Orleans. Prevailed at St. Louis also.

1867.—A general abatement in Europe. Prevalent in South America. Buenos Ayres suffered greatly.

1867.—At New Orleans, reappeared in June; 571 deaths the following six months. Again at St. Louis during summer and fall.

1868.—Completely died out in Europe.

1869.—By its old route it reached Nijni Novgorod, and broke out in September.

1870.—A vast outburst of cholera. In Russia, 9,386 deaths.

1871.—In Russia, 124,834 deaths.

1872.—In Russia, 113,196 deaths.

1873.—In Russia, 4,395 deaths.

1872.—Very widely diffused over Europe. Imported into England on several occasions. Its spread stopped by the local sanitary authorities.

1873.—Began to subside in Europe.

1872, December, and 1873, January.—There arrived at New Orleans a total of nearly two thousand immigrants from cholera infected districts of Europe.

1873, February 9.—First death at New Orleans. Two hundred and fifty-nine fatal cases occurred during the epidemic.

1873, April 8.—First case, fatal, at Vicksburg.

1873, June 30.—First case, fatal, at Little Rock. Four importations; no spread owing to the energy and efficiency of the medical men in whose care the initial cases occurred.

1873, April 15.—First case, fatal, at Memphis.

1873, May 24.—First case, fatal, at Chicago. Total number of deaths from cholera and cholera morbus, May and September, one hundred and sixteen. Many towns and villages suffered greatly.

1873.—First case at St. Louis, died 11th of May. A mild epidemic followed. Other localities visited.

1873.—First case at Paducah, died May 21. Very widely diffused throughout Kentucky.

1863, June 15.—First death reported at Cincinnati. Two hundred and seven deaths during the summer. Other cities and towns in Ohio visited.

1873.—June 6.—First death at Evansville. Other localities in Indiana visited.

1873.—During June and July sixty-two deaths at Huntsville, Ala., Birmingham, with about three thousand inhabitants, was terribly scourged during June and July.

1873, June 15.—First case, fatal, at Wheeling.

1873.—But two authenticated cases of cholera occurred in the State of Georgia. Both were residents of and refugees from Chattanooga. One died at Atlanta, population 22,000, on July 2. The other, at Dalton, population, 5,000, on July 3. Both instances terminated fatally in communities in which the auxiliaries to the rapid development of a cholera epidemic were present, the specific causes once having been imported; yet in both instances, by the prompt and energetic action of the medical men having the case in charge, the power of the disease was confined to the infected individual, and the health of the residents of the respective houses and of each community were efficiently guarded.

1873.—During this year some two hundred cities and towns in the Mississippi valley were more or less afflicted. See *Public Health*, Vol. I, pp. 224-252.

1882.—Made its appearance in Egypt, where in three or four months it occasioned a mortality of 30,000 to 50,000 of the inhabitants.

1884.—On June 13 or 14, it invaded the French military post, Toulon. Then the cities of Toulon and Marseilles, and spread through the south and southeast of France, and partly in central and western France.

1885.—At Marseilles and in Bretagne.

1884.—About August, in Spain.

1885.—Invaded almost the whole of Spain.

1884.—Brought into Italy.

1885.—Great ravages at Palermo, Sicily.

1885-6.—At Venice.

1886.—From April during the rest of the year it ravaged the peninsula of Italy.

1886.—At Trieste, and also the Austro-Hungarian shores of the Adriatic.

1887.—Again in Sicily and in Italy.

1884-1887.—The epidemic of cholera in Europe cost France 15,000 inhabitants in 1884, 1885 and 1886; Spain, 180,000 inhabitants in 1884 and 1885; Austro-Hungary, 4,000 inhabitants in 1886; Italy, about 50,000 inhabitants in 1884, 1885, 1886 and 1887; Malta, 500 inhabitants in 1887; a sum approximately of 250,000 inhabitants of Europe. In other words, the epidemic has removed from France about one inhabitant for every 3,000, from Italy one inhabitant for 550 or 600, from Spain one inhabitant for every 100, from Austro-Hungary one inhabitant for every 9,000. An approximate calculation of these losses, estimated from the purely material point of view, shows a sum total of about $80,000,000 of value destroyed. A still greater loss resulting from the damages caused by the disease through idleness, interference with commerce and navigation, interruption of business, etc., would increase the sum total of the losses occasioned by the cholera to about $200,000,000 in three or four years. See report of E. O. Shakespeare, M.D., U. S. Commissioner.

1886.—Cholera introduced into Buenos Ayres, Argentine Republic, in November, by the ship Perseo, plying between that city and Genoa. A conspicuous instance of official pride and stupidity. An extensive epidemic developed, and the disease spread through the inland provinces. The city was cut out entirely from the commercial world; Uruguay, Brazil, Paraguay, and most of the European ports quarantined against it.

1887, January 19.—Cholera officially declared at Montevideo, Argentine Republic, after many denials of its existence.

1887, January 2.—Cholera at San Felipe, a town situated near the base of the Andes, 40 miles north of Santiago. The latter city severely scourged. Commerce of Chili interrupted, with heavy losses.

1887, September 23.—The steamship Alesia arrived at New York from Marseilles with cholera on board. At Naples some 600 immigrants, from the cholera districts of Italy and Sicily were taken aboard. Proper precautions used by the quarantine officials and the disease not allowed to spread. Much credit claimed, and justly, considering their limited means.

However, the case of the Italian steamer Independente, which arrived in New York in October with a large number of immigrants, and not showing cholera on board, was allowed to discharge her passengers, after a few hours of detention, necessary for a thorough inspection, shows the insufficiency of this New York safeguard. The next day numerous squads of these immigrants, with their baggage, departed for at least twelve great cities, in widely distant parts of the country.

CHOLERA IN EUROPE 1892.

1892, June 27.—At Baku, the Russian port on the Caspian, 48 new cases and 38 deaths. The town in a deplorably filthy condition, and without the least pretense of sanitary arrangement.

June 30.—Rome—Five cases have occurred in Italy.

July 1.—The administration of the towns in the Asiatic provinces of Russia taking energetic measures to prevent its spread.

July 1.—Many cases reported in the outskirts of Paris.

July 6.—Saratoff on the Volga scourged.

July 8.—Panic in Astrakhan.

July 11.—In Paris 14 deaths.

July 14.—Terrible in Astrakhan.

July 17-21.—Russian official returns announce 4,839 cases and 2,590 deaths for this period.

July 23.—Advance toward the Russian frontier. Absorbs public attention in Berlin.

July 23.—At Nijni Novgorod and Moscow. Expected at St. Petersburg.

August 5, 6.—Cholera returns for all Russia these two days show a total of 6,741 new cases and 3,496 deaths. Prior to August 1, total deaths, official, 23,919.

August 1-12.—In St. Petersburg 154 cases and 31 deaths between these dates officially admitted.

August 11.—In Northern and Central Russia increasing. In Moscow many factories closed.

August 13.—Returns for Russia this day show a large increase in new cases and mortality.

August 15.—Total number of new cases reported in Russia, 7,600; total deaths, 3,900. Two-thirds of the towns attacked can make no reports for lack of telegraphic connections.

BOOK REVIEWS.

TREATISE ON THE DISEASES OF WOMEN. FOR THE USE OF STUDENTS AND PRACTITIONERS, by ALEXANDER J. C. SKEENE, M. D. Second edition, revised, enlarged and finely illustrated. New York: D. Appleton & Co., 1892.

The first edition of this valuable work at once received from all students of gynecology the stamp of commendation, as it was a most excellent exponent of the most advanced professional knowledge of diseases of women. Its immediate adoption as a standard text book in the colleges, indicates its appreciation by both teachers and students.

That the work may be continued in this high position, its author has thoroughly revised the book and added new chapters on ectopic gestation, diseases and injuries of the ureter, vesical hernia and its surgical treatment. While his latest views, particularly find expression in the chapters on laparotomy, ovaritis and injuries of the cervix uteri and pelvic floor. Typographically, the book is a work of art.

HUMAN MONSTROSITIES, by PROF. BARTON COOKE HIRST, M.D., and PROF. GEORGE A. PIERSAL. Part iii, with nine photographic reproductions and thirty-four wood cuts. Philadelphia: Lea Brothers & Co.

This, the third volume of this highly artistic and scientific work, has many features of attractiveness. The plates comprise beautiful illustrations, from photographs, of typical specimens of rhinocephalus, cyclocephalus, acephalus and diprosopus. The plates represent the various monstrosities in several positions, thus giving a most accurate demonstration of the peculiarities of each, and enabling the seeker after information, to classify any particular specimen quite readily.

SEVENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF THE STATE OF KANSAS. For the year 1891. E. H Snow, State Printer, Topeka. 1892.

This is the first report issued under the direction of the new secretary, Dr. M. O'Brien, of Topeka. We seem to miss the practiced hand of Dr. J. W. Redden, whose reputation as a sanitarian is as wide as the country. His resignation took effect in July, 1891, and it can hardly be expected that we will see his signature again in an official capacity. We trust that the Commonwealth he well served has not been ungrateful towards him.

This volume presents more popular reading than is commonly found, and we judge that its contents are aimed to do missionary labor in political fields that are disinclined to perform their full sanitary duty. The following epistle appears in the Report to show the opposition met by the State Board in their efforts to establish local boards of health.

"*two the board of helth offiscer of the Stait of Kan.*

"threw request of docter ——— of ———, I wish to write and Stait that the board of county cometioners have concluded mot to hier a county helth oficer as it Seems to bee the publick centiment of the peopel of this county that it is a waist of public funds to pay a pyhfesetion to look of the helth of this county and it seems to bee an imposibilety to get the docters of this county to make a report of the berth and dethe of the county and aS an impartiel report is aquivelent to now report a tall the county cometioners have decided to retain the services of docter ——— as a Kind of a figuer head in case of an epodemic to act as help oficer and mke Such reports as seems best and the board a Grees to pay him according to his work.

respectively yours

———, *Chairman of the board of County cometioners.*"

The writer of the report adds:

"This communication is not introduced to illustate the humor of the situation, although the situation does, at long intervals, take on a humorous aspect; nor is it introduced primarily to disclose the insufficiencies of the "Chairman of the board of County cometioners." To write and read come by nature, and have been called a vanity. We desire only to call attention to the degree of obliquity against which Health Boards must make head, even in enlightened Kansas."

But the County Commissioners are not the only dealers in phonetic discourse. In another part of the report is printed the letter of a practitioner of Greencastle, Missouri, who, being "too grossly ignorant and illiterate to be permitted to engage in practice elsewhere, find ready asylum here,"—in Kansas, sent an inquiry to the Board. It is with reluctance that the Secretary confesses that the writer of the following could settle in Kansas any day or hour he may elect:

> "Dear Sir i Would like to know What the laws is in regarde to the practice of medicin in the state of Kansas is a man aloud to practice their With out a certificat from a medical School i have ben tolde that the board of health gave permishon in that State if so when does board meet and if i can get the endorsement of three practicing physicians Would that do or Would i half to come before the board."

The old plea of "fair play" is worn threadbare in the cases of such pretenders as these, and yet this plea speciously and persistently presented has thus far defeated every effort toward the passage of proper restrictive legislation. On pages 70, 104 and 224 are given some very sharp home-thrusts against the different charlatans who thrive on the sufferings of Kansas citizens. The long-haired itinerant with his band-wagon and female accompaniments, whose pranks and antics serve to beguile a tedious day appears as an especial pest. Having quoted so much from this Report we purpose to take one more selection, giving a sweeter, nobler picture —and one which we are thankful to say finds frequent mention in the literature of the present time—an able man's reminiscences of his family doctor. The writer of the following sketch from life is Chief Justice Horton of the Supreme Court of Kansas.

> "I recall with affectionate remembrance our family physician, upon whom from my earliest childhood I looked with youthful reverence and unquestioning faith. Before me, to-day, I see his kindly face and listen to his pleasant voice. He was a very hero, in my eyes; of commanding figure and magnificent physique. There could be no finer, braver, better man. He was the wise counselor, the skilled restorer, the sympathetic friend. The silver had crept into his hair, and careful thought and much exposure had lined his brow, but there was ever about him a brightness and cheeriness which seemed a part of his presence, only that it lingered after he had gone. I recollect that one of our neighbors went raving crazy, and with a gleaming razor menaced a crowd which gathered around him. But the doctor, alone, rushed dauntlessly forward, overpowered and unhanded him, exhibiting a physical courage and prowess sufficient to win the heart of any boy. Yet it was not this instance of fearlessness in time of danger which in my maturer judgment went furthest to prove his resolution and heroism. It was the tried and constant disregard of self, through the long years of a varied practice. No call was disregarded; no contagion appalled, no storm or tempest ever dismayed him. The humble and poor received his attentions in equal measure with the wealthy and influential. All of his life he went about doing good, ministering to the afflicted. His heart was in his work. His zeal, energy, patience, skill and industry combined in modeling the man fit for the highest ideal of life.
>
> 'A combination and a form indeed,
> Where every god did seem to set his seal
> To give the world assurance of a man.'"

Judge Horton's entire address is an argument to show why legislation is proper that will make men like the foregoing a staple product of the State, and make the long-haired ignoramus a contraband and fugitive. Judge Horton would seem to be a "tower of strength" to legitimate medicine in his State.

MISCELLANY.

Unfit for Colonization.—An agent of Baron Hirsch reported that the Jewish peasants in the Odessa district are so degraded that the Argentine Republic would not allow them to be sent to the Jewish colony there, and that it is therefore expected that they will be sent to the United States.

The death of Dr. Thos. F. Wood, the well-known editor of the *North Carolina Medical Journal*, is briefly announced in that publication.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending August 27, 1892.

P. A. Surgeon C. W. Rush, from special duty in connection with the International Railway Commission, and to the Navy Yard, New York.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Three Months Ending August 20, 1892.

Surgeon P. H. Bailhache, granted leave of absence for fourteen days. May 25, 1992.

Surgeon George Purviance, granted leave of absence for seven days. August 9, 1892.

Surgeon John Vansant, granted leave of absence for thirty days. August 13, 1892.

Surgeon H. W. Austin, granted leave of absence for thirty days. June 21, 1892.

Surgeon G. W. Stoner, to proceed to Port Huron, Sault. Ste. Marie, Saginaw, Marquette, Mich., Duluth, Minn., and Superior, Wis., as inspector. July 11, 1892.

Surgeon F. W. Mead, granted leave of absence for thirty days. August 3, 1892.

Surgeon H. R. Carter, to proceed to Chicago, Ill., as inspector of unserviceable property. August 16, 1892.

P. A. Surgeon Eugene Wasdin, granted leave of absence for twenty-eight days. July 21, 1892.

P. A. Surgeon J. H. White, granted leave of absence for thirty days. August 13, 1892.

P. A. Surgeon P. M. Carrington, granted leave of absence for twenty-seven days. August 13, 1892.

P. A. Surgeon W. B. McIntosh, granted leave of absence for thirty days. July 8, 1892.

P. A. Surgeon G. M. Magruder, granted leave of absence for seven days. August 18, 1892.

P. A. Surgeon R. M. Woodward, granted leave of absence for twenty-five days. August 1, 1892.

P. A. Surgeon J. B. Stoner, granted leave of absence for twenty-six days. August 13, 1892.

Asst. Surgeon A. W. Condict, granted leave of absence for twenty-six days. July 21, 1892.

Asst. Surgeon S. H. Hussey, to proceed to Galveston, Texas, for temporary duty. August 11, 1892.

Asst. Surgeon C. P. Wertenbaker, to proceed to Pittsburgh, Pa., for temporary duty. August 9, 1892.

Asst. Surgeon J. C. Perry, to proceed to Charleston, S. C., for temporary duty. July 19, 1892.

Asst. Surgeon A. C. Smith, granted leave of absence for twenty-eight days. August 13, 1892.

Asst. Surgeon M. J. Rosenau, to proceed to Cairo, Ill., for temporary duty. July 27, 1892.

Asst. Surgeon L. E. Cofer, to proceed to Norfolk, Va., for temporary duty. June 10, 1892. Granted leave of absence for twenty-three days. August 6, 1892.

Asst. Surgeon J. M. Eager, to proceed to Evansville, Ind., for temporary duty. August 11, 1892.

Asst. Surgeon J. A. Nydegger, assigned to temporary duty at Baltimore, Md. July 6, 1892.

Asst. Surgeon W. J. S. Stewart, to proceed to New York, N. Y., for temporary duty. July 6, 1892. To proceed to Wilmington, N, C., for temporary duty. July 19, 1892. To proceed to Savannah, Ga., for temporary duty. August 9, 1892.

PROMOTIONS.

Stoner, J. B., commissioned as P. A. Surgeon. June 30, 1892.

Guiteras, G. M., commissioned as P. A. Surgeon. July 27, 1892.

APPOINTMENTS.

Nydegger, James A., M.D., of Maryland, commissioned as Asst. Surgeon. July 1, 1892.

Stewart, William J. S., M.D., of Pennsylvania, commissioned as Asst. Surgeon. June 30, 1892.

The Journal of the American Medical Association

Vol. XIX. CHICAGO, SEPTEMBER 10, 1892. No. 11.

ORIGINAL ARTICLES.

A FEW EXPERIMENTS WITH THIERSCH'S GRAFTS IN THE OPERATION FOR PTERYGIUM.

Read in the Section of Surgery and Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 8, 1892.

BY F. C. HOTZ, M.D.,
PROF. OF OPHTHALMOLOGY IN CHICAGO POLICLINIC, CHICAGO.

A pterygium is nothing but a fold of ocular conjunctiva drawn over and fastened to the cornea, and to make our operation for pterygium a permanent success, we must after releasing the conjunctival fold from the cornea, arrange matters so that the conjunctiva cannot be drawn back over the cornea again. In a pterygium of moderate size this aim is usually attained by a very simple operation. The conjunctival fold is carefully dissected from the cornea, and allowed to retract as far as it will. from the corneal margin. This leaves between the retracted conjunctiva and the cornea, a small wound area to close which we draw the conjunctiva from above and below together, and unite the edges by two sutures. If this wound heals by first intention, there is no danger of a recurrence of the pterygium.

But in a number of cases the pterygium is so large, and the gap in the ocular conjunctiva after its dissection and retraction is so wide that it is very difficult, sometimes almost impossible, to close it with conjunctival sutures. At all events, the strain upon these sutures is so great that often they cut through in the first twenty-four hours and allow the wound edges to separate. The resulting gap is then gradually closed by granulation tissue, which is also filling the corneal area from which the pterygium has been removed. And when this new tissue begins to consolidate into a cicatrix, its shrinkage will gradually pull with an irresistible force the ocular conjunctiva over the cornea again. The pterygium has returned; our operation is a failure.

These failures make everyone wish for an operative procedure which promises better results. When, therefore, last year in August, I had occasion again to operate on a pterygium of this unpromising kind, I decided upon trying a new plan. I had by this time convinced myself in a number of cases of symblepharon that the thin skin shavings obtained by Thiersch's method are an excellent material for patching up defects in the conjunctiva. I give them decidedly the preference to graftings of mucous membrane; for the Thiersch grafts are much easier to handle and to fit; they need no sutures; they grow better and shrink much less. And as to appearance, they are as smooth as the surrounding conjunctiva, but look paler, more whitish.

Now it seemed to me worth the trial to fill the gap in the ocular conjunctiva caused by the dissection of a broad pterygium, with one of these Thiersch skin grafts; for if it adhered it would most assuredly keep the conjunctiva away from the cornea, and as it probably would look whitish, its color would blend well with the white of the eyeball.

These considerations induced me to try the skin grafting in the pterygium case last August. The pterygium reached to the center of the cornea, and the sides diverged from the apex backwards so rapidly, that when they crossed the corneal border they included about one-fourth of the corneal circumference. This pterygium was dissected off from the cornea,and the subconjunctival fibres which bind the pterygium to the sclera and cause the foldings of the conjunctiva,were carefully and thoroughly divided all the way back to the caruncle so that the conjunctiva could retract and unfold itself. The retraction left a large area of the sclera (10 mm. wide and 12 mm. high) denuded of conjunctiva. To fill this defect I shaved a Thiersch graft from the inside of the patient's forearm, transported it from the razor directly to the denuded sclera and spread it out smoothly over the entire wound. I had cut the graft a little larger than the wound so that when the graft was smoothened out over the sclera, the edges of the conjunctiva were overlapping the graft. My idea in tucking the edges of the graft under the conjunctiva was that the overlapping conjunctiva would assist in keeping the graft in place, and protect its edges against being rolled up or wrinkled by the frictions of the eyelids on the eyeball during the latter's rotations. But this part of the plan did not work well; for on the next day I found the edges of the graft were not under but even with the conjunctiva, and the graft reached about 2 mm. over the cornea. It had evidently been pushed toward the cornea just so much as it had been tucked under the conjunctiva. On the third day when I was satisfied the graft was firmly attached to the sclera, I lifted the edge which overlapped the cornea and trimmed it back even with the margin of the cornea. At first the graft had a pink color; but after the second week it was white, being covered with epidermoidal cells which could easily be scraped off. Later on the layer of epidermoidal cells become thinner but firmer, and now (I saw the patient on April 23 the last time) the surface of the graft is smooth and shining, and only a very little higher than the ocular conjunctiva. It has shrunken a little, more in the horizontal than in the vertical diameter; but it holds its place well, and forms a firm immovable bar which makes it absolutely impossible that the conjunctiva should ever again be drawn into the cornea.

In February I applied the same plan to two other cases of pterygium; but profiting by the experience of my first trial I cut the grafts smaller than the defects they were to patch up. In the second case the defect measured 12 by 10 mm. and in the third eye 6 by 10 mm.; the skin grafts were cut 10 by 8, and 5 by 8 mm., respectively. Both took well and though after two months their horizontal diameter was reduced from 10 to 6 in the one and from 5 to 3 in the other eye, they still serve the purpose well of holding the conjunctiva back from the cornea.

I do not wish to draw any positive conclusions from these few experiments; but it seems to me they show that Thiersch's skin grafts readily adhere to wounds on the eyeball; that they may be utilized in patching up defects in the ocular conjunctiva; and that the insertion of a Thiersch graft may prove a valuable means to make the operation for pterygium a permanent success, even in the worst kind of cases.

Discussion.

Dr. A. E. Prince, Springfield, Ill.:—The valuable paper of Dr. Hotz commands recognition. I think the work an excellent one. I have had two cases in which there has been a similar experience and the results have been so satisfactory as to lead me to be very much encouraged. In one of the cases the conjunctival complication was a symblepharon. I transplanted a considerable portion of conjunctiva from a white rabbit's eye and greatly ameliorated the condition. In the second case the transplantation was taken from the inner surface of the lip and the purpose was to overcome a blepharophimosis. I took out a rhomboid section of mucous membrane of the lip and transplanted it. The result was very good in the relief of the symptoms.

Dr. G. C. Savage, Nashville, Tenn.:—I am inclined to the opinion that the reason for some of the returns of pterygium is to be found in the condition of the cornea left after removal. I do not think that it is proper to attempt to dissect off by instruments the corneal attachment of a pterygium. In that way we leave an unfavorable condition for the development of epithelium so as to rapidly cover in the denuded surface of the cornea. We leave some of the growth when we attempt to remove it by scissors or knife. I have never operated after the method of Dr. Prince in peeling off the corneal attachment with a strabismus hook, although I think that it would be better than the use of the knife or scissors. My plan is to make a puncture above and below the growth at the corneal margin through which I pass one blade of the scissors and make a V shaped incision with the opening toward the cornea. Then dissecting up carefully to the cornea I seize the loosened growth with fixation forceps, instruct the patient to look towards the nose while I pull in the opposite direction when every vestige of the growth is removed. Of course if there is much of the sclera exposed because of the broad base of the pterygium, then I conceive that the operation of Dr. Hotz is a good one, and I shall make use of it. If the open space is not so great, the edges of the conjunctiva can be brought together by sutures; and, before cicatricial tissue has formed, the corneal abrasion has been covered by epithelium. My experience is that the pterygium is not likely to recur after this method of operating. This operation is not new to me. I got the idea from some one, but I can not now say where.

Dr. H. M. Starkey, Chicago.—I should like to make a suggestion in regard to a method of treatment of pterygium which I have employed with highly satisfactory results in a few cases, not a sufficient number to make a report upon, but simply to suggest that others may try it. It is particularly adapted to those cases where there is a minimum amount of fibrous tissue and a large amount of vascular tissue. The method is that of electrolysis. We know how quickly a mild current of electricity will shrivel up blood vessels. In a case of pterygium which seemed to be composed almost entirely of blood vessels, it occurred to me that electricity would be of service. I therefore employed the negative current in a strength of one or two milliampères with a platinum needle pressed under the growth and in two sittings the blood vessels were obliterated and the condition has not recurred. This is a painless operation under cocaine, is followed by little reaction and no mutilation. I have used it in half a dozen cases and have been well pleased with it.

Dr. A. R. Baker, Cleveland, O.:—It seems to me that the suggestion of Dr. Hotz is of immense value in symblepharon in which there is excessive loss of conjunctival tissue, but I think that it can not take the place of the old operation of transplantation of the pterygium below the cornea. You simply transplant the healthy conjunctiva to the place occupied by the pterygium. I have done this operation a number of times and have never felt the need for any other. Where the pterygium is very broad split it and put one part above and the other below the cornea. In this way we can manage any pterygium no matter how large.

Dr. J. E. Minney:—I use Prince's method in the main and find it very good. If I find that a portion of the pterygium remains I take a knife and scrape it off aiming to get it entirely smooth. I find that if I destroy the blood supply at the margin of the cornea, there is less liability to a return. The method which Dr. Hotz suggests is one that I shall give a trial. I have had cases in which I needed just such a method.

Dr. Henry D. Noyes, New York:—I had not the pleasure of hearing the paper of Dr. Hotz, but I should like to make a statement in regard to pterygium. In former times I regarded incipient pterygium as of no importance and thought it not necessary to interfere, but I have changed my views and in the last five years, experience has shown me that it is important to deal with pterygium even at an early period before it has advanced toward the middle of the cornea as it interferes with the curvature of the cornea. I have found by examination with the ophthalmometer the cornea rendered astigmatic by the pressure of a pterygium and that its removal has altered its curve. For this reason I have made up my mind that it is desirable to operate for pterygium at a period when it does not mechanically cause any interference with sight.

Dr. F. C. Hotz, Chicago:—As to the method of removing the corneal part of the pterygium, I cannot see why the removal should be less complete if we carefully dissect the conjunctival part from the cornea with a scalpel than if we remove it by the brute force of pulling. I am always opposed to any brutal manipulation about the eye and this pulling out of a pterygium looks to me like one of these manipulations. I think that I can more accurately gauge my interference with the tissues with the knife because I can control the effect of my cutting absolutely, but if I tear I cannot control that any more than when I tear a piece of cloth. But whether you remove it by traction or by the knife, there is a denuded surface of the cornea which must heal. If superficial, it may heal over at once with epithelium. In an old pterygium where the superficial layers of the cornea have been involved, it fills up with granulation tissue and forms a scar; and as this scar extends from the cornea back over the sclera, it draws upon the ocular conjunctiva and pulls it towards the cornea again.

The philosophy of transplanting the pterygium I could never understand except on the ground that the pterygium is a foreign growth, and from the remarks of Dr. Baker, I am inclined to think that he takes that view. But a pterygium is no new growth, but the conjunctiva which has become changed by chronic inflammation and drawn into the cornea. Fuchs has recently published a paper in which he says in regard to the histology of pterygium that it is a conjunctival fold in which there has been chronic inflammation with subsequent changes in the connective tissue, one of the characteristic features of which is a predominance of elastic fibres. Whenever you lift up a pterygium, you can see that it is connected loosely with the sclera, except along a transverse line following the extension of the horizontal meridian of the cornea toward the caruncle. Along this line, the conjunctiva is bound to the sclera by firm bands like cicatricial tissue and when these are cut you will see that the conjunctival folds spread out smoothly.

This goes to prove that the peculiar foldings of the conjunctiva in the pterygium are produced by the contraction of the subconjunctival connective tissue.

THE CARTWRIGHT PRIZE FOR 1893.—The usual award of this prize, valued at five hundred dollars, will be made in June, 1893. The alumni of the Medical Department of the New York College of Physicians and Surgeons are the sponsors for this valuable premium for original medical investigation. Any person may compete, and he may write upon any subject connected with the science of medicine. About the only restrictions are the provisos that the prize may not be given to two or more persons working jointly, or to a competitor who has sent his essay elsewhere to compete for another prize. The personality of the author should be, as is the usual rule, concealed, and the papers must be sent to the secretary of the alumni on or before April 1, 1893.

OSTEOMA OF THE ORBIT, REMOVAL WITH PRESERVATION OF VISION.

Read before the Section of Ophthalmology, at the Forty third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY EDWARD JACKSON, M.D.,
PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC, SURGEON TO THE WILLS EYE HOSPITAL.

The following case seems to me to be of sufficient importance to place upon record:

Miss M., æt. 18, had noticed two years before, a swelling of the left upper lid, pretty uniform and unaccompanied by pain or soreness. This swelling has since then increased gradually until the present time. For the last few months, there has been some pain over the upper inner angle of the left orbit.

About one year ago she noticed that the vision in the left eye was not so good as in the right, but the eyes had not previously been separately tested, and there has been no deterioration of vision since. In the right eye the vision is as good as it has ever been. In the right eye the media are clear; there is hyperopic astigmatism; the disk is oval clear, of good color; fundus dark, normal. Left eye, media clear; higher hyperopic astigmatism; disk oval, clear, of good color; arteries bear due proportion to veins in size. Muscle tests, show right hyperphoria of from 0 to 1 centrad; laterally there is muscular balance, power of abduction 5 centrads; adduction 10 to 12 centrads; sursumduction, right or left, 1 centrad. A hard tumor is felt below the upper margin of the left orbit from which it is separated by a distinct though narrow sulcus. It extends from the inner third to the outer angle of the orbit, and about one centimetre in the vertical direction. The left eye is displaced downward one centimetre and forward eight millimetres. No lateral displacement can be recognized.

1891, October 9, I removed the tumor. A free incision was made through the upper lid just below and parallel to the upper margin of the orbit, and the growth freely exposed by the retraction of all the soft parts; it proved to be entirely hard and connected with the roof of the orbit by an apparently broad base and to extend more than half way back to the apex of the orbit. The exposed surface was bitten away with rongeur forceps. But it was soon evident that these would remove but a small part of the growth. The saw was tried but could not be used to advantage. The chisel gave no result, because I feared to apply sufficient force, not knowing at what point it might cause fracture. With a hand drill however, three holes were made in different directions, and the intervening bone split with the chisel, separating the growth from its attachments, and dividing it in two principal fragments which were then extracted. During this process, there being a tendency to extrusion of the globe between the lids, at the suggestion of Dr. Risley, these were stitched together and the stitch removed at the completion of the operation. The attachment to the walls of the orbit proved to be upward and inward three-fourths of an inch back from the orbital margin, and the removal of the tumor opened the ethmoidal sinuses so that blood escaped through the nose. The tumor weighed about 13 grams. The wound was washed out with bichloride solution, a catgut drain brought out at the outer angle, and the wound closed with seven sutures; a gauze dressing was applied with a bandage, so as to make firm pressure on the lower lid. The operation was done under ether and lasted one hour and three quarters.

The temperature did not rise above the normal, the wound closed by first intention. Drainage and sutures were removed on the seventh day. At the first dressing, next morning, there was found considerable swelling, especially of the conjunctiva which protruded between the lids, and could not be entirely returned. Next day, the protruding portion was snipped off, after which the swelling and hyperæmia rapidly diminished. At the end of two weeks the swelling was greatly reduced and the globe had almost, but not entirely returned to its normal position. There was, however, very little power of moving the eyeball, and diplopia was experienced in all parts of the visual field except the centre. There was complete ptosis.

From this time there was rapid improvement in the motility of the globe, and at the end of four weeks she experienced diplopia only in the extreme periphery of the field of binocular vision. The ptosis had decidedly lessened. One month later, her recovery was complete except a moderate ptosis. Her condition continued the same up to the time she was last heard from. With Right + 0.25 sph. ⊃ + 2. cyl. ax. 110°, V.= 4-4 mostly. Left + 0.25 sph. ⊃ + 3. cyl. ax. 65°, = 4-15, about the same as before the operation.

It is interesting to note in this case that although the tumor appeared in the outer two-thirds of the orbit, its origin was from the upper inner angle about three-fourths of an inch back from the orbital margin, and the displacement was directly forward and downward.

Although the eye-ball had been carried forward to the extent of almost a centimetre and the insertions of the muscles to that extent removed, there had been no squint or diplopia, there was very little heterophoria, and no marked weakness of the ocular movements.

All the movements of the eyes except the elevation of the upper lid were completely restored within a few weeks.

In the removal of the exostosis which was throughout almost its whole extent, of ivory like hardness, the common bone drill worked simply by hand, penetrated rather rapidly and proved by far the most efficient as well as the safest means of attack.

A CASE OF RARE FORM OF ORBITAL TUMOR..

Read in the Section of Ophthalmology at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY G. E. FROTHINGHAM, M.D.,.
OF DETROIT, MICH.

Cases in which tumors are developed in both orbits are extremely rare. That the tumors should occupy exactly the same position in each orbit, and correspond in form and size, and develop at nearly the same time, is still more remarkable. For these reasons, as well as some other unusual characters, I have thought the following case worthy to be put on record.

Miss E. D., age sixteen, of Canton, Michigan, consulted me January 11, 1892.

The father gave the following history: In May, 1890, she noticed a tumor of the left orbit. There was no pain in the tumor or protrusion of the eyeball, but the tumor projected somewhat, and was situated above the eye, extending from the inner extremity of the superciliary ridge to the outer canthus, and causing a prominence parallel with, and just below this bony arch. The tumor felt hard and was slightly movable on firm pressure. She visited the clinic at Ann Arbor, and had an operation for its removal, in December of the same year. A large firm tumor was removed. The eyeball protruded after the operation, presenting the appearance shown in the photograph here presented which was taken on the 10th of May last. The recovery from the operation was rapid, the patient leaving the hospital in about a week after it was performed. While recovering from the effect of the operation, she was feeling about her right eye, and noticed a tumor over it in the same position as the one which had been removed from the left orbit. It had also the same feeling and was slightly movable; she also noticed before she left the hospital that there was a small tumor at the outer portion of the left orbit and also one near the center of the lower portion below the eyeball.

At the time I examined her, there was a large tumor of the right orbit, causing a prominence projecting to about the same level with the bony margin, and about an inch and a half in length on its anterior border. It was situated above the levator palpebrarum and close to the orbital plate of the frontal bone. The eyeball was displaced downward and there was double vision, except when looking sharply downward, the image of the right eye being above that of the left. There was a tumor at the outer margin of left orbit, slightly movable and apparently extending deeply inward. There was also a small, very movable tumor below the left eye, which still remains. On the 14th of January, assisted by my son, Dr. G. E. Frothingham, Jr., and by Dr. L. Connor, I operated for the removal of the tumor of the right orbit.

An incision was made along its anterior border down to the tumor, which was carefully dissected from the surrounding tissues, by means of the handle of the scalpel and probe pointed scissors. When this had been done, the tumor was carefully dragged from its bed, bringing with it the firmest strands of connective tissue, which extended inward from its deep border at the bottom of the orbital cavity. The supra-orbital nerve was so intimately blended with the tumor, that it had to be sacrificed. After the hæmorrhage had ceased, a small drainage tube was inserted sufficiently deep to allow escape of any blood that might accumulate from subsequent oozing, and the edges of the cut then brought together by suture, and the wound dressed with cotton saturated in solution of bichloride of mercury, 1-2000. There was but little reaction, and the patient left the hospital in one week from the operation, with the wound healed and the parts almost entirely free from swelling. The double-vision was completely relieved by the removal of the tumor. The tumor measured a little more than an inch and a half along its anterior border, and about the same along its posterior border. It extended also a little more than an inch and a half into the orbit. It was wedge-shaped, the base forming the anterior portion of the tumor. The thickness of the firm portion was, at the base, a little more than three-eighths of an inch at the inner extremity, and slightly over one-fourth of an inch at the outer extremity. It grows gradually thinner, as it approaches the edge. It is very firm to the feeling like fibro-cartilage, and resembles on section the appearance of dense, white fibrous tissue, or condensed connective tissue.

There was some degree of ptosis of the lid, after the operation, but that was soon recovered from. There has been no sign of recurrence of the tumor of the right eye up to the present time. There is no resulting exophthalmus, and vision is unimpaired. The patient being anxious to be relieved from the proptosis of left eye, I operated upon it on the 10th of May, last Making an incision, extending the outer canthus, and then dividing the palpebral ligaments of both lids to a sufficient extent. I thus made an opening sufficiently large, without endangering the nerve supply of the orbicularis. Through this opening I removed a tumor about three-fourths of an inch long, half an inch wide, and one-eighth of an inch thick, extending into the orbit behind the globe. The periosteum seemed thickened at the bottom of the orbit, but no distinct tumor could be felt. The tumor below the eye could not be removed through this opening, and I thought it more judicious to leave it for a subsequent operation, than to make so extensive dissections at one time. The wound was treated as in the operation upon the right eye. The inflammatory reaction was, however, much greater, and seemed quite threatening during the first thirty-six hours. It then began to subside. The conjunction was much swollen, however, and it was two weeks before it could be fully replaced under the lower lid. The vision is unimpaired and the proptosis seems less though not greatly diminished by the operation.

An examination made by Dr. George Duffield, shows the tumor to be a fibro-sarcoma, with the fibrous element very largely predominating—a tumor that is sometimes called a fibroma. It seems to develop from connective tissue, and is not a frequent form of sarcomatous tumors. It is said that a preponderance of cellular elements is the peculiar feature of all sarcomata. At any rate, those I have found, either within the eye or the orbit, were rich in cells and quite friable, instead of being firm and tough like the one here presented. I believe such tumors nearly always become very rich in cells, and have blood-vessels within them before they have grown to the size this one had reached.

The tumor removed from the left orbit by Prof. Carrow, Dec. 4, 1890, was reported by the pathologist as a sarcoma, but the variety was not given.

Discussion.

Dr. H. Knapp, New York:—I beg to make some remarks especially with reference to the paper of Dr. Frothingham. I wish to point out the difficulty in diagnosis in some of these cases, as on three occasions I have fallen into a great mistake. Some of these tumors are benign although they present the features of malignancy. I remember three cases of this kind. The *first*, was an individual, about 20 years of age, with a tumor situated deeply in the orbit producing exophthalmus. It was supposed to be a sarcoma and yet it completely disappeared.

In the *second* case, there was considerable exophthalmus from large growths in different parts of the orbit. The eye was taken out by one of the surgeons of the Manhattan Eye and Ear Hospital and the tumor cleanly removed. On microscopic examination, it was pronounced to be a small-celled sarcoma. The patient came to me two years later with the same condition in the other eye. There was great protrusion of the eye and solid masses were distinctly felt in the orbit. I could not advise the woman to have that eye removed and I was not sure that otherwise the radical removal of these tumors could be accomplished. She was under general treatment and three or four months afterward I heard that she was better and that the tumors gradually diminished in size. After about 15 months she again came to me and was perfectly cured. The growths and the exophthalmus had disappeared without leaving a trace and without any injury to the functions of the eye.

Another case was sent to me last year, by Dr. Morgan, of Springfield, Massachusetts. The tumor had sprung from the inner side of the orbit and seemed to be connected with the periosteum. It looked like a periosteal sarcoma. Dr. Morgan removed the growth and the microscope showed that it was sarcoma. That patient had similar growths in the nasal passage of the same side. It seemed to be a case of sarcomatous growths of the nasal passages protruding into the orbital cavity. After the removal by Dr. Morgan, there was a rapid relapse. In several months the growth was as large as before. The tumor seemed to go into the wall of the orbit so deeply that I did not think any operation could be done with benefit. The orbital small celled sarcomata are as malignant as any tumors can be. This patient after leaving me went to an electrician and also took some indifferent remedies. She perfectly recovered. She said that the improvement began after being under the electric treatment for four or six weeks and had steadily continued. Not long ago she presented herself to me and there was no trace of the trouble left. The orbit was normal and the nasal passages were free. She came to express her gratitude that I had advised her not to be operated upon.

What are these growths that come under the mask of sarcoma and evidently are not malignant? They are not fibromata for they do not disappear. The only thing that I can imagine is that they are lymphomata. In the first case the diagnosis of lymphoma was not so difficult because there were swellings in other parts. It was a symptom of Hodgkin's disease. In the other two cases, there was nothing to lead me to such a diagnosis. The disease was purely local. The histology of the tumor was in all the same, a small celled tumor with more or less fibrous tissue. When

I see such a tumor, if I am sure that it is not in connection with the orbital walls, I hesitate to advise its immediate removal. If it progresses there is nothing else to be done. If the tumors are multiple and malignant, we cannot do any good. If there is such doubt and I think the doubt cannot be entirely excluded, I would rather wait before committing myself to the removal of the eye or tumor.

The different elements which constitute these tumors may perhaps lead to the diagnosis of lymphoma. We must also bear in mind the possibility of diffuse or disseminate sarcoma which is the worst kind of all. We think to have removed them cleanly and it is not two months before you see tumors in the neighborhood. Some of these cases have been sent to me for operation after some of the tumors have been removed. I have removed the orbit's contents cleanly to the periosteum and on examining them I have found all through the orbital tissue, patches and nodules of sarcomatous tissue. In one case the diffuse sarcoma was melanotic and had invaded the optic nerve. These points are to be taken into consideration in the diagnosis of these tumors of which some are certainly benign.

Dr. Reeves, Toronto:—Seventeen years ago I enucleated an eye for sarcoma in which there was found a melanotic tumor. The tumor was not examined microscopically. It was a firm tumor occupying a large portion of the vitreous chamber. About sixteen years later, two years ago, the patient again presented himself. For fifteen years there had been no sign of disease of the orbit. On examination I found indications of sarcoma of the orbit and two years ago last October, I operated. The patient had marked cephalalgia. I cleaned out the orbit completely and applied chloride of zinc. Microscopical examination showed the tumor to be a melanotic sarcoma of the optic nerve. The patient is in good health with no sign of return of the growth. The cephalalgia disappeared in a few weeks after operation.

I do not consider this a case of true recurrence of sarcoma, I do not believe that sarcoma can remain latent for fifteen years. It is a case rather that may be explained on the principles of the abnormal development of embryonic tissue which existed there from the beginning.

Dr. Julian J. Chisolm, Baltimore:—About a month ago, I had occasion to take out an eye in a case that presented the question, at what period during the existence of an intra-ocular tumor is systemic infection established? The patient had bad detachment of the retina with absolute loss of vision, for one year but unaccompanied by pain. A week before I saw him the first pain was experienced. The eye was much injected, there was the usual tension, and the pupil was slightly dilated. These were all evidences of an intra-ocular growth and a correct diagnosis was made although the detachment of the retina excluded the use of the ophthalmoscope. When the eye was removed and opened, I found a growth not larger than a pea which proved itself a melanotic sarcoma. It had infiltrated the sclerotic although the inflammatory symptoms with tension had existed only one week and the tumor did not occupy one-sixth of the vitreous space.

Dr. S. C. Ayers, Cincinnati:—I have recently had a case of tumor of the orbit, which was to me, one of extreme interest. I first saw the patient a year ago last March. There was a little exophthalmos and vision was considerably reduced. There was infiltration of the optic nerve and under the lower lid one could feel a suspicion of a growth. I again saw the patient a week or ten days later. Vision had fallen to one-half and I thought that I could feel that the tumor had developed in these few days. I gave my opinion that it was a sarcoma originating in the apex and pressing forward rapidly and that vision would be more and more reduced and advised removal of the tumor and removal of the globe if necessary. I thought that it was not possible to save the globe. I saw the patient no more until fall. He went elsewhere and an attempt was made to remove the tumor and save the globe, but the attempt was not successful in either direction. Panophthalmitis followed the operation and the man suffered intensely for a long time and the tumor again began to grow. When I saw him in the fall, there were four or five large firm nodules around the rim of the orbit. I said then that it was useless to do anything. I saw the patient from time to time, but the tumor was evidently not growing forward, but was clearly advancing toward the brain. He was soon bed fast and his nutrition seriously impaired. He lost flesh and in February had paralysis of the right arm. The tumor involved the right eye. He died about six weeks ago. During the latter part of his illness there was observed a ridge or elevation in the periosteum extending upwards and following the suture of the parietal bone. The bone was tender. He also complained a good deal of pain in the region of the cerebellum.

When the post-mortem was made we found that the parietal bone and the upper portion of the frontal and of the occipital bones were softened. The parietal was so softened that it could almost be penetrated with a knife. The internal surface of the parietal was covered with a growth looking like granulations. The internal and external surface of the dura was covered with a similar deposit. The granulations on the internal surface were larger and more exuberant than those in other places. The sphenoid bone could be cut with a knife. The tumor had not involved the brain, but had simply grown over the anterior surface and pressed it down. The operation originally would have had no more influence than to prolong life for a little while. The extension of the growth backwards and the involvement of the bone and dura mater was something new in my experience.

Dr. Johnson, Paterson, N. J.:—I agree with Dr. Knapp as to the necessity of considering carefully the desirability of making these operations, on account of the possibility that the tumors may be benign in their nature. At the same time I had occasion to see a month or two ago a case in which, after operation was advised, delay had been made as a result of the desire of the patient's family. When the tumor became sufficiently increased in size to alarm them, they permitted operation, which was followed in a short time by rapid recurrence of the tumor and death of the patient. I think that it is desirable, if operations on orbital tumors are to be made, that they should be made early. I have operated on a number of orbital tumors, some of which were sarcomatous in their nature; one in particular, on which I operated eight or nine years ago, was reported in the *Archives of Ophthalmology.* The growth was examined microscopically by Dr. Prudden, and pronounced to be a myxosarcoma of the optic nerve. Up to this time there has been no recurrence. Whether or not this was one of those tumors with a malignant appearance and a benign effect, I cannot say. In these tumors presenting a malignant appearance it is desirable that they should be removed as soon as we can make up our minds whether they are malignant or benign while it is still possible to remove the entire growth.

Dr. J. A. White, Richmond, Va.:—I have seen cases of sarcoma which did not recur. Fibroma is not in its nature malignant, but I consider it more malignant than ordinary sarcomatous growths, because it almost invariably recurs. I have seen only three cases of fibroma of the orbit, and in every case there was recurrence. I think that it is difficult to state how much the fibrous change has taken place in certain tissues, because of the little difference microscopically from the normal appearance.

In regard to whether or not the last growth will recur, I do not know, because I have never seen a case of miliary tuberculosis of the orbit before.

Dr. George E. Frothingham, Detroit:—I should like to add one word in connection with these tumors. It has been questioned here whether a melanotic sarcoma can remain stationary as long as fifteen years. I remember a case where a melanotic sarcoma of the choroid had ruptured through the external tunics. It was thoroughly removed, but after six or eight years, it recurred. All the contents of the orbit were then removed, and after four or five years, it again returned.

As to the question of the malignancy of these growths, I think that we have very imperfect knowledge. One fact has been well established, that is that some of these cases will never recur, while in others operation seems to stimulate their growth. In 1876, I had a peculiar case which bears upon this matter. A patient came with a painful, blind eye, the lens opaque and the iris attached to the lens, and the tension increased. He had such severe pain that enucleation was decided upon. Fearing malignancy, the nerve was cut as far back as possible. After removing the tumor, I examined the eye, and found about the optic nerve some connective tissue which felt a little harder than normal. Internal examination showed no tumor within the eye. It was simply a case of chronic inflammatory disease. A few months afterward the patient came with a large mass protruding from the orbit. I think that within five months after the eye had been removed, that immense mass developed. It was so evidently malignant that I at once decided to operate. The whole contents of the orbit were removed. The growth was so closely connected with the bony wall of the orbit that I decided to apply chloride of zinc paste. This produced necrosis of the bony wall, so that the brain protruded into the orbit, and then the wound granulated.

His physician reported a few months later that he had died with all the evidences of malignant disease of the kidney. Examination showed the growth to be a giant-celled, rapidly growing sarcoma.

Another case occurred in a child 2 years of age. A firm tumor was found at the outer part of the orbit. It had the feel of a sarcoma, and connective tissue was found extending into the bone. It was cut loose, but rapidly recurred, and the child died.

THE ETIOLOGICAL RELATION OF NASAL DISEASES TO AFFECTIONS OF THE EYES.

Read in the Section of Ophthalmology at the Forty third Annual Meeting of the American Medical Association, held at Detroit. Mich., June 1892.

BY DR. H. GRADLE,
CHICAGO.

Within the past eight years various publications have appeared intended to show a connection between certain ocular and nasal disturbances.

The proof that lesions of the orbit, eye and its appendages or symptoms referable to these parts are induced by preëxisting nasal diseases, can be furnished in various ways, viz.:

1. We may trace anatomically the extension of disease of the nasal cavity into the orbit or into the appendages of the eye.

2. We may observe clinically the involvement of these parts or of the eye itself in disease consecutive to and in direct connection with nasal disease.

3. We may influence in a characteristic manner by means of nasal treatment eye effections the prognosis of which is definitely known.

4. More decisive than these methods is the experimental production of eye lesions in animals in consequence of nasal disturbances. As yet, nothing has been done in this line. But practically equivalent to experiments on animals are various observations of disturbances in the eyes or lids following experimental irritation or irritant treatment of the nose in patients.

Of these different modes of proving the connection between ocular and nasal diseases the first method is the most definite one, no matter whether we trace the extension of the disease during life or at an autopsy. The second way, the clinical observation of the evolution of the ocular disorder demands reliance upon the patient's statements, since the physician can but rarely see such cases at their incipiency. The sequence of the two disorders is after all only suggestive of the dependence of one upon the other; it is not an absolute proof. It is only the repeated observation of cases with similar histories in this respect that can establish the etiological relationship with some certainty. But it must not be demanded that because a certain eye disease is of nasal origin in some instances it should always depend upon the same etiological conditions.

Most of the writers on this subject have employed the third mode of reasoning—that is to say, the therapeutic test.

When they observed an improvement in certain eye symptoms after nasal treatment they reasoned that the nasal condition has been the cause producing them.

This mode of reasoning however, is beset with errors, against which we must guard ourselves. The prognosis is not always so certain in the class of diseases principally referred to, especially asthenopic complaints, so that an improvement following any given treatment can be attributed to that treatment only if it sets in very promptly. We must be sure that neither other measures employed, nor the mere lapse of time are responsible for the patient's improvement.

Moreover, in estimating the beneficial results of any new treatment, particularly of a surgical character, upon nervous symptoms we must not ignore the possibility of mental suggestion. For these reasons as well as on account of the short period of their observation some of the cases and conclusions recorded in literature are not as convincing of the relation of the nose to the eye, as their authors claim.

When the question arises whether actual ocular lesions and not mere functional derangements are to be considered as secondary results of nasal disease the therapeutic test cannot be regarded as an absolute criterion. For lesions once started do not necessarily cease on removal of the conditions that induced them. In such instances the etiology can only be established on the basis of careful histories.

American authors have mostly dealt with functional derangements only, but cases published by Gordon, de Schweinitz and various European observers, as well as my personal experience, point out that also different lesions of the eye and its appendages may be of nasal origin.

On the basis of personal experience, and aided by the published observations of others, I shall attempt to classify the various ocular derangements dependent upon nasal disturbances, and will aim to distinguish critically between actual proof of such connection and mere probability of nasal origin.

I. In diseases of the *lachrymal passages* nasal affections are found present in the majority of instances [20 22 40 and personal experience] †. In speaking of nasal diseases or anomalies, I refer to demonstrable lesions or marked deviations from the normal shape, no matter whether they give the patient annoyance or not. If we were to diagnosticate nasal disorders only on the strength of the patient's statement as to the discomfort in the nose, we we would overlook many instances of chronic disorders in the less observing class of people. On the other hand, whenever I speak of acute nasal catarrh, I do not rely on the patient's reference to a "cold," but demand a definite history of the symptoms of coryza.

The mere coincidence of nasal disorders, so common in our climate, with lachrymal disease, is far from being a proof of their correlation. Stronger, however, is the evidence that in one-sided lachrymal disease the affected passage corresponds almost invariably to the more abnormal side of the nose. A direct proof that the nose is the starting point of the disease of the tear-canal can only be obtained when an intelligent patient observes the insufficiency of the tear duct or the inflammation of the sac beginning during an acute attack of nasal disease. Of such instances I have a number in my records. I do not wish to overlook, however, that occasionally lachrymal disease, especially narrowing of the canaliculi, is the result of conjunctival disease.

The therapeutic test is not decisive in lachrymal affections. Neither in stricture of the duct nor in suppuration of the sac, can removal of the nasal lesions restore the integrity of the lachrymal passage without surgical treatment of the diseased part. But that nasal treatment can aid the local procedures in maintaining the patency of the lachrymal passage is proven by the cases published by de Schweinitz,[40] as well as by some similar observations of mine.

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† The figures in brackets refer to the authors quoted at the end.

It may be in place to point out a source of error in estimating the influence of nasal treatment upon diseases of the tear-passages. *Lachrymation* is not necessarily indicative of obstruction of the tear canal. An abnormal flow of tears may result from disease of the conjunctiva or eye as well as—in many persons at least—from nasal irritation, even when the tear canal is normal. On the other hand, an obstructed duct leads to an overflow of tears only when they are secreted in excess. Some patients with stricture, or even after obliteration of the sac, have epiphora only when the eye is irritated by wind. Nearly all authors who have written on the relation of the nose to the eye speak of lachrymation as a symptom produced by nasal irritation and cured by nasal treatment. The beneficial influence of nasal treatment, when undertaken in connection with local measures directed against the disease of the lachrymal passage, is therefore not a definite proof that the lesion in the duct or sac was cured thereby. It signifies only that the excessive reflex secretion of tears has been stopped.

II. The *eyelids* are the seat of occasional vascular disturbances in persons with irritative forms of nasal disease. The attacks may amount to a transient *circumscribed œdema*, perhaps analogous to urticaria, or may resemble *erythema*, or even a *pseudo-erysipelatous* condition. The attack may be one-sided or bilateral. Hack[1] claims to have proven their nasal origin by several observations in which they followed the use of the galvano-cautery in the nose, while in some other instances their habitual recurrence ceased after nasal treatment. I[15] have seen about half a dozen of such attacks, but have never had the opportunity to follow the results of nasal treatment for a sufficient length of time to prove the nasal origin by the therapeutic test. In every instance, however, there was the history of habitual nasal irritation with an acute exacerbation preceding the skin trouble.

Blepharitis has seemed to me to be dependent in some instances upon nasal disturbances. I have repeatedly observed the squamous form of this disease relapse during treatment when the patient got a fresh coryza. A few times, I have seen the inflammation of the lids cease spontaneously, after a cure of the coexisting nasal condition, for which the patient had applied to me. On the other hand, I have three times seen an ulcerative blepharitis, in which I could easily stop the ulceration by local measures, but could not remove the parenchymatous inflammation of the edge of the lid until I began to treat an atrophic rhinitis evidently maintaining the blepharitis. In these instances the condition of the lid improved in proportion to the amelioration of the nasal process.

III. Of diseases of the *conjunctiva*, I have seen not very rarely a *subacute conjunctivitis* occurring during the course of a fresh coryza. Its dependence on the nasal trouble seemed probable, because its course ran parallel to that of the coryza. While its intensity could be reduced by use of nitrate of silver or sulphate of zinc, it could not be checked with the same promptness as ordinary conjunctival catarrh. A similar conjunctivitis likewise rebellious to all treatment, is often seen in hay fever. I have formerly described a form of periodic hypertrophic conjunctivitis allied to hay fever (*American Journal of the Medical Sciences*, April, 1886), but cannot say whether this condition depends on nasal trouble

Chronic *congestion* of the conjunctiva is often observed in connection with chronic nasal irritation or stenosis, and will not be found to yield to any treatment except removal of the nasal anomaly. The congestion is not necessarily limited to the lining of the lids. Indeed, the history that an eye without active inflammation, is at times bloodshot, I have found to be quite characteristic of irritation of nasal origin. Such eyes are apt to be irritable. I have seen several cases of injection of the conjunctival and scleral vessels with considerable smarting or burning of the eyes maintained by protracted follicular inflammation of the pharyngeal tonsil, sometimes without marked discomfort in the throat. The dependence of the eye disturbance upon the pharyngeal infection, was shown by the prompt influence of applications of nitrate of silver to the inflamed adenoid tissue.

The conjunctival congestion may pass into *catarrhal* inflammation. I take this to be a secondary infection, because it is easily arrested by conjunctival treatment, but is apt to relapse unless the underlying nasal disorder is removed. But cases have also been reported, first by Gordon, and since by other American authors in which a severe chronic conjunctivitis with thickening of the mucous membrane did not yield to any local measures, but were promptly cured by the cure of a rhinitis.

Attention has been called by Ziem and by Despagnet[32] to the frequent coexistence of trachoma and nasal catarrh. There is no proof, however, that they are related to each other, although some observations like those of Taylor[26] make it not improbable that nasal trouble can account for the obstinacy of some cases of trachoma.

IV. A dependence of some *corneal* diseases upon nasal disorders is probable, but not yet definitely established. Trousseau[23] speaks of 11 instances of corneal ulcers which did not heal promptly until an ozœna present was treated. Yet the case given in illustration is by no means conclusive of any connection.

Phlyctenular keratitis and the *punctiform corneal infiltrations* of scrofulous children, are as a rule accompanied by a sero-purulent rhinitis.[33] In some instances, I have seen every relapse of this form of corneal disease preceded by nasal obstruction and discharge. Nasal disease does not, however, exist in all cases. The therapeutic test is rarely conclusive, though often suggestive of a nasal factor in the causation of phlyctenular keratitis. As a rule, the corneal trouble yields readily to local treatment. Still I have seen a fair number of children in which the corneal disease lingered while the nasal condition had received no attention, either on the part of other competent oculists or a few times in my own practice. In some of these instances the treatment of the rhinitis was followed by prompt improvement of the corneal lesion, in others, however, not.

Three times I have seen a very characteristic type of corneal disease in the form of flat papules on the limbus and pinhead-sized specks of infiltration in the cornea supplied with bundles of blood vessels comparable to the so-called fascicular keratitis. The individual lesions were of long duration, and left cloudy spots on the cornea, while relapses protracted the course for months. In every instance there was a marked diffuse hypertrophy of the nasal mucous membrane (not merely of the cavernous tissue) and with it thickening of the external nose. The pharyngeal tonsil was moderately enlarged in two of the cases. The disease was not influenced by any treatment. But the negative result does not exclude a nasal origin, for while the surgical treatment improved the patency of the nose it did not lead to full integrity of the nasal lining during the time of observation. Two of the cases got well spontaneously; the other one was lost sight of. (See also Ziem [8].)

V. *Iritis* occurs occasionally though not frequently during an acute coryza. The possible connection between the two affections is emphasized by the statement of some intelligent patients with relapses of iritis, that every attack was preceded by acute nasal inflammation. Ziem [17] has also noticed the occurrence of iritis in connection with suppuration of the nose and accessory cavities and thinks that nasal treatment exerted a distinct influence in one instance.

VI. *A not well defined intraocular affection suggestive of chronic glaucoma* has been observed—once by Berger [13] following a galvano-caustic operation in the nose which resulted in necrosis of the nasal wall—while Ziem [14] has reported three such instances caused by intra-nasal cauterization. The eye involved corresponded to the injured side of the nose. The patients had either slightly reduced central vision or what was more characteristic with it a restricted field of vision and diminished accommodation.

In Ziem's cases there was venous congestion and pulsation of the papilla. The sight improved spontaneously, but the histories do not proceed until complete recovery. Ziem [23 24 27 29] subsequently reported several more observations in which similar symptoms, notably the restricted field of vision, occurred in patients with empyema of the maxillary sinus, but ceased after cure of the suppuration. Several times there was suspicious hardness of the eyeball. In two of the patients with disease of the antrum on both sides the sight of one eye had previously been destroyed by some intraocular process, apparently cyclitis. Lennox Browne [16] also refers to a case of chronic glaucoma not benefited by iridectomy, but apparently arrested and the sight improved by the removal of nasal polypi.

Ziem attributes these attacks of reduction of sight, field and accommodation to intraocular congestion especially of the ciliary body. There is, however, no proof of their glaucomatous nature; they do not even correspond to the prodromal stage and excavation of the papilla was never present. The case mentioned by Browne is not described sufficiently to be intelligently criticized. I could find no other observation of this kind on record and have never seen the condition in any of my patients with empyema of the antrum.

VII. The *optic nerves* are separated from the cavity of the sphenoid sinus by a bony wall, frequently quite fragile and not rarely imperfect. Disease of the sphenoid sinus, suppuration, caries or tumors may hence lead to compression and neuritis of the chiasm and intracranial portion of the optic nerves. Berger and Tyrman [10] collected 23 cases of this nature from the literature up to 1880, and in his latest monograph Berger [43] refers to 5 additional instances. Some of them, however, were due to growths of the sphenoid bone, and hence cannot range amongst eye affections of nasal origin. Various authors seek the cause of retrobulbar neuritis in infection through the sphenoid sinus. However plausible this view may be, it is in no way proven, and the cases quoted by Berger [43] p. 37, are not convincing of such an origin.

VIII. *Neuritis* of the *nerves supplying* the *muscles* of the eye seems to depend occasionally upon nasal inflammation according to my own observations. During the past 18 months I have seen but three instances of paralysis of ocular muscles, the course of which characterized them as of peripheral, not syphilitic origin. In all these cases the paralysis was preceded by a severe nasal catarrh in the course of which persistent headache set in, which was then followed by the sudden paresis. Twice the nerve involved was the abducens, once the extraocular fibres of the third nerve. All three ended in recovery. The inference that the neuritis resulted from extension of the nasal infection was strengthened in one case by the existence of a polypus high up on the same side of the nose.

IX. *Orbital disease* may be simulated by morbid processes in either the frontal or the ethmoid sinus. As the consideration of such instances is almost foreign to our subject, I will refer simply to the reviews by Berger and Tyrman [10] and by C. Stedman Bull.[39] But suppurative inflammation of these cavities may indeed penetrate into the orbit, leading to circumscribed *orbital abscess* as in the cases recorded by Peltesohn.[19] To what extent the numerous instances of orbital phlegmon and of tenonitis observed after influenza, resulted from the extension of inflammation in the nasal and accessory cavities is a subject worthy of further study. Various instances of *orbital tumors* also took their origin from the ethmoid and frontal sinuses.[10-43]

In rare instances, neoplasms of the nasal cavity may also invade the orbit. Nieden [9] reports two cases of malignant growth in the nose entering the orbit, one directly by perforation, the other by way of the cranial cavity. Personally, I have seen a cavernous growth of the nasal cavity extend into the orbit. The vascular tumor originating in the nose and filling one side of it completely, was radically removed by the use of the galvano-cautery in the course of some ten weeks. During the course of treatment, the orbit became invaded by a vascular new-formation, presumably of the same nature as the nasal tumor. This however, receded again spontaneously, and after the lapse of some three months, there remained no evidence of any orbital tumefaction.

The orbital congestion and tumefaction, together with the other disturbances which constitute *exophthalmic goitre* have in a few rare instances been entirely removed by the treatment of intra-nasal anomalies. The fact that there are but seven observations of this kind on record, shows that a nasal origin of this disease is a very rare occurrence. But the prompt disappearance of the symptoms—usually so persistent—of Basedow's diseases after nasal treatment in six [6] of the instances, is as decisive a proof of their dependence upon the nasal anomaly as any therapeutic test can furnish.[1]*

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*Hopman, Deutscher Natuaforscher Congress 1885, reprinted in Berliner klinische Wochenschrift 1888, No. 42. Hack, Deutsche med, In another striking case reported by Semon (*Internat. Centralblatt f. Laryngologie*, VI, p. 238) one-sided exophthalmus and palpitation of the heart were provoked by a galvano-caustic operation in the nose, but subsided after the lapse of a few days.

X. The most common ocular affections of nasal origin are the *sensory* and *functional derangements.* In my experience, I find that in every 100 patients applying on account of refractive anomalies or asthenopic complaints, there are about two to three instances with subjective symptoms curable by nasal treatment. The nasal origin of these symptoms can be proven only by the therapeutic test, for which there is a proper field whenever no cause for the complaints can be found in the eyes or their muscles. There is nothing characteristic in the history of these cases. The annoyance from the nasal trouble may or may not be slight. The development of the eye symptoms is generally gradual, but sometimes they occur in a more acute form during the acute aggravation of a preëxisting nasal disease. The anomaly causing them is most commonly some obstructive lesion in the nose often, though not invariably, associated with nasal irritability. A few times I have also seen marked ocular discomfort produced by subacute follicular inflammation in the tonsils or at the vault of the pharynx.

a. The eye symptoms described by authors [5 6 7 11 12 15 18 21 25 26 30 31 33 36 41] as of nasal origin, are itching, burning and smarting of the lids, shooting pains through the eyes, sometimes a heavy, full feeling, but not often an actual ache. Characteristic of the nasal origin is their presence immediately on awaking. Usually there are remissions in the severity of the annoyance during the day. Sometimes there is associated with this discomfort, more or less injection of the conjunctiva, even of the eyeball and lachrymation. The sensitiveness to light may be exaggerated to an extent causing tonic blepharospasm, but often, too, there is no photophobia or irritability.

The eye-discomfort due to nasal disease is in some persons not increased by use of the eyes. In others, however, all eye work intensifies the symptoms so as to render steady use of the eyes impossible. I have formerly[15] come to the conclusion that this asthenopia is of mixed origin. Most of the sufferers of this type show on examination some refractive or muscular anomaly. If this is corrected they can use their eyes with greater ease, but yet are not free from discomfort. If on the other hand, the nasal condition can be cured the patients enjoy comfort while they rest their eyes, but require their glasses for work. The cases published by De Schweinitz[41] seem to conform to this view. I do not think, however, that this combination of refractive (or muscular) asthenopia with nasal influence is accidental. It has seemed to me that the nasal influence renders the nervous system sensitive to a degree of eye strain, which normal persons with the same optic conditions can usually bear without discomfort. Some of my patients have indeed been able to drop their glasses without suffering some time after the cure of the nasal disorder.

There are, besides, other instances in which nasal lesions alone, cause typical asthenopia for work even in emmetropic persons. In my experience this type has not been common. A striking case has been reported by Kibbe.[42]

Hoffman[4] has called attention to asthenopia due to failure of the accommodation in persons with cheesy accumulations in the tonsils, and claims to have cured such patients by treatment of the tonsils. I have likewise been able to benefit a number of young persons by excision of the tonsils or destruction of the distended crypts. In my cases, however, I could not demonstrate an absolute diminution of accommodative power, as measured by the distance of the near point, but the strain or blurring on use of the eyes seemed to depend on an inability to maintain continuously the required accommodative effort.

b. Another functional trouble which in some instances seems of nasal origin is fugitive scotoma or blind headache. Hack[1] p. 36, describes two instances of this kind in which the spells of migraine with scotoma scintillans ceased after galvano-caustic destruction of excessive cavernous tissue in the nose. I have seen a number of instances in which a connection between such attacks, and the nasal condition was suggested by correspondingly one-sided obstructive lesions with irritative symptoms during the attack. But I have only had opportunity twice to satisfy myself of the persistent cessation of the blind spells after successful nasal treatment.

c. Blepharospasm can sometimes be traced to nasal influence. Persistent closure of the lids may result from the photophobia engendered by nasal disease, as reported in an extreme instance by Bettman,[12] or by suppuration of the maxillary sinus as seen by Nieden.[9] But cases also occur in which clonic spasms of the lids, or even chorea of the orbicularis and facial muscles, are stopped by the removal of nasal anomalies. Ziem[8] has seen such cases subsequent to the removal of enlarged pharyngeal or faucial tonsils. Jacobi (*N. Y. Med. Record*, January 30, 1886) has also called attention to the influence of naso-pharyngeal disease in the production of facial chorea. Personally I have seen not very rarely chorea of the lids and of the face in children suffering from subacute rhinitis, in whom the gradual cessation of the muscular twitching in proportion as the nasal disease was improved can be considered positive evidence of the nasal influence. In some instances I have been able to demonstrate the nasal origin by means of the calming effect of a cocaine spray. In others, however, the experiment with cocaine, as well as the result of treatment, have led me to attribute the chorea to irritation proceeding conjointly from both morbid nasal and diseased conjunctival surfaces.

Two observations reported, the one by B. Fraenkel (*Berliner Klin. Wochenschrift*, No. 22, 1884), the other by Peltesohn (*Berl. Klin. Wochenschrift*, No. 32, 1891), show that even typical one-sided tic spasmodic, involving the orbicularis as well as the other facial muscles, may be a reflex of nasal origin.

d. The possibility of reflex contractures of ocular muscles in consequence of nasal lesions is illustrated by a singular observation published by Quinlan,[37] in which convergent squint occurred after a fracture of the nasal septum, lasted ten years, and disappeared spontaneously after operative correction of the deflected bone.

Wochenschrift 1888 No. 25. Fraenkel, B., Berliner klin. Wochenschrift 1888, No. 6. (Goitre and cardiac symptoms without exophthalmus.) Stoker, Internat. Centralblatt f. Laryngologie, V, p. 579. (Two cases.) Musehold. Deutsche med. Wochenschrift, 1892, No. 5. (Goitre and cardiac symptoms, no exophthalmus, but one-sided ocular pain, cured by removal of a small hypertrophy from the rear end of the inferior turbinated body.)

In trying to answer the question how nasal disorders can lead to these eye symptoms and lesions, we must take into account four possible modes of causation:

1. Processes of growth cause the extension of tumors through the sinuses into the orbit or into the cranial cavity. Hypertrophies also may involve mechanically the nasal end of the nasal duct.

2. By extension of infection through lymph vessels, through foramina or deficiencies in the bony walls, or along continuity of surface, inflammatory processes may pass from the nose into the orbit, may reach the intracranial portion of the optic nerve, or may creep into the lachrymal sac. Clinical observation shows that this spread of infection is favored by narrowness of the nasal passage, or by obstructions interfering with the drainage of pus.

3. Circulatory disturbances may occur in the form of venous congestion whenever mechanical conditions exist in the nose which impede the circulation. This is particularly the case in nasal obstructive lesions. We can often see the resulting stasis in the form of dark venous rings around the lids, and in the congestion of the edges of the lids. The anatomical conditions which determine the involvement of the orbital and palpebral veins in nasal disturbances are the anastomoses between these vessels and the veins of the nose, which connections vary in different subjects. Besides the passive venous engorgement, there may occur active congestion of the conjunctival, and perhaps also of the intraocular vessels, in connection with acute or irritating nasal inflammations, comparable to the congested zone surrounding any inflammatory focus. Both the active and the passive vascular disturbances are probably accompanied by interference with the lymphatic circulation. That this disturbance of nutrition should reduce the resisting power of the ocular tissues to accidentally present germs, is a presumption supported by many pathological observations.

4. Lastly, the nasal influence may consist in nervous disturbances—the so-called reflexes. This is evidently the mode of production in blepharospasm of nasal origin, and in abnormal lachrymation. Vascular disturbances may also be of reflex origin, as can be demonstrated by irritating the nasal mucous membrane in sensitive persons, or by extracting a hair at the entrance of the nose. Some of the sensory derangements of the eye are likewise due to the irritation of the sensory nerve of the nose, a proof of which can sometimes be given by the calming effect of nasal spray of cocaine. To call them reflexes, however, is a misuse of a physiological term. A better name would be sensory neuroses of peripheral (*i. e.*, nasal) origin.

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HETEROPHORIA AS A CAUSE OF ACUTE RHINITIS, LOSS OF SMELL AND TINNITUS AURIUM.

Read in the Section of Ophthalmology at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June. 1892.

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That diseases of the nares affect the functions of the eyes unfavorably in many directions, is a well accepted fact the confirmations of which are numerous and constantly increasing. In some ways it has been recognized that disorders of the eyes disturb the functions of the nares. Thus all those eye diseases that increase or diminish or render ichorus the secretion of the conjunctiva and lachrymal glands, definitely modify unfavorably the functions of the nares, often exciting severe inflammations which can only be relieved by the abatement of the disordered secretion, or the rendering of it normal in quantity and quality. Farther, it is a matter of record that defects of refraction by inducing disorders of the conjunctival secretions modify the functions of the nares in many important particulars.

Thus a disorder of the eyes may originate in a disorder of the nares, and a disorder of the nares may originate in a disorder of the eyes. My purpose is not a discussion of these intercurrent relationships in general, but to present a single observation upon a single point among these relationships. By this I hope to show that in one instance a condition of exophoria uncomplicated with any other discernable abnormality did induce an acute rhinitis, a loss of the sense of smell, a tinnitus aurium, and a general nervous prostration. The instance I give briefly.

On July 24, 1891, Miss G. H. applied to me for relief from severe and frequent attacks of acute rhinitis, tinnitus aurium and loss of smell. She was a strong healthy appearing woman, single, a type writer by occupation, and twenty-eight years old. She said that aside from these troubles she had never been sick, and had been able to follow her calling during the past twelve years without scarcely a vacation. Her troubles began very gradually, but she was able to show that they had existed for at least a year and a half previous to July 24, 1891. First she suffered only from the attacks of rhinitis. After about six months she noticed a loss of sense of smell, and about seven months later the tinnitus aurium. The constitutional disturbance attending the attacks was slight at first, but had gradually increased in intensity until it had become so severe as to almost incapacitate her for work. The attacks of rhinitis occurred at somewhat irregular intervals, averaging about one a week and lasting from two to four days. During the attacks there was a constant flow of watery fluid from the nose, compelling her to keep a handkerchief to her nose nearly all the time, and thus seriously interfering with her work. To provide a receptacle for this fluid from half a dozen to a dozen handkerchiefs were needed daily. With the fluid was more or less mucous and some little pus. The character of the fluid or the mechanical results from wiping the nose produced a great amount of excoriation about the vestibule of the nose. During these attacks the mucous membrane of the nose became red, rough, sensitive and the turbinated bodies so swollen as to quite occlude the nasal passages on one or both sides. Sometimes one nostril would be most affected, and sometimes the other, and again both.

Accompanying these attacks was great and indescribable general distress which continued for a time after the attacks disappeared. No external condition seemed to have any effect upon this onset or departure. They were as frequent during fall and winter as during spring and summer. Foul air, dust, emanations from flowers or vegetable matter did not seem to interfere with them in any particular.

They were, however, increased in frequency and force by over work and over heating.

An examination at first visit showed a condition of the nares identical with that already described. The sense of smell was entirely absent. The hearing for R. E. was $\frac{17}{48}$, for L. E. was $\frac{6}{48}$ as tested by watch. The tuning fork and Politzer's acumeter gave similar results. The membrana tympani of either side exhibited the characteristic appearances of chronic non-suppurative otitis media plus an acute attack of inflammation of the middle ears, as shown by a red line along the handle of the malleus, lack of lustre, and diminished mobility. Her eyes were not examined, for the reason that she gave no symptoms referable thereto. She had for a year and a half previous to my seeing her, been under the care of an expert in diseases of the nose and throat, but without appreciable relief, in fact she had steadily grown worse in all respects.

Regarding the case as one of recurring attacks of acute rhinitis extending to the mucous membrane of the upper pharynx, Eustachian tubes and middle ears, I managed it accordingly. The greatest relief was obtained by the application to the engorged mucous membrane of trichloro-acetic acid. This clearly shortened the attacks and lessened their severity, but they still recurred, and the attending disability of hearing, loss of smell, and tinnitus remained. No modification of her time or place of work, or other changes in her mode of life suggested by the circumstances produced any marked improvement.

Finally it occurred to me that in spite of the fact that she did not complain of her eyes or head, and did her work with ease when not suffering from the attacks of rhinitis, that a waste of nerve energy would be prevented by the correction of her exophoria. She would not consent to an operation upon the stronger tendons, so that recourse was had to prisms. On Feb. 12, 1892, I gave her to wear before each eye, a prism of three degrees. This was but a partial correction of her exophoria, but it added to her comfort so markedly, that in a few days they were increased to four degrees, and a few days later to six degrees. This corrected her exophoria to within a half a degree. There was no hyperphoria, nor any defect of refraction, her vision being normal in all respects.

The effects of wearing these prisms may be briefly stated. Without any local treatment of her nose she had no return of her trouble for a couple of weeks. This was so peculiar that she was requested to lay aside the prisms. The result was a prompt attack of rhinitis of the old type. She was then permitted to resume the wearing of the prisms, and will not part with them because convinced of the relief they afford her. To date of writing, some three months, she has been entirely free from these attacks. Gradually the tinnitus diminished, until for the past two months she does not recognize it. Even attacks of ordinary cold do not affect her differently from other persons. Her hearing has increased in her R. E. to $\frac{18}{48}$, and in her L. E. to $\frac{10}{48}$. The membranes of the ears have assumed a more healthful appearance. Her sense of smell returns more slowly, but it is surely increasing. Her habits and mode of life have remained as they were during the local treatment to the nares and ears. The most careful scrutiny of this case fails to reveal any other cause for the attacks described, than the exophoria.

In conclusion it is to be noted:

1. An exophoria of twelve degrees uncomplicated with any other deformity or disability of the eyes did produce and continue for more than two years a most distressing affection of the nares.
2. Indirectly this exophoria caused loss of smell, tinnitus aurium and deafness, with great nervous prostration.
3. In one such case the correction of the exophoria by prisms aggregating twelve degrees produced immediate relief which has continued during two months and more.[1] It also indirectly cured the tinnitus, increased the hearing, and the sense of smell.
4. There is no reason to deny that in another case the disturbance induced in the nerve centres by an exophoria, may not attack other organs or apparatuses, and induce in them effects similar to those we have seen induced in the nares and adjacent structures.

AN OPERATION FOR THE RADICAL CURE OF STRICTURE OF THE LACHRYMAL DUCT, WITH DESCRIPTION OF A STRICTUROTOME.

Read in the Section of *Ophthalmology* at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY CHARLES HERMON THOMAS, M.D.,
OF PHILADELPHIA.

All those who have busied themselves with the surgery of the lachrymal passages must be aware that surgeons have not agreed upon a satisfactory method for the treatment of stricture of the lachrymal duct. With respect to the possibility of radical cure, the attitude of many is one of discouragement, perhaps even of disgust. Of all procedures in use, none is so generally employed as dilation by probes. But the length of time which this method of treatment requires, the amount of trouble it involves, together with the uncertainty of permanent good results, all of which its adherents admit, make it very desirable that some more effective procedure be adopted.

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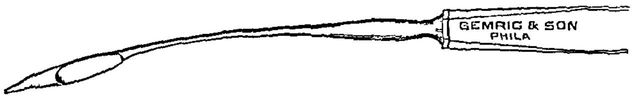
[1] Sept. 1, 1892.—As this article was being corrected, an examination of the case showed a continuance of the improvement described; this covering a period of nearly six months.

Influenced by the results obtained by French surgeons in internal urethrotomy, Dr. Stilling, then of Hesse-Cassel, published a brochure in 1868,[1] detailing a new method of treating stricture of the lachrymal passages by internal incision, an operation devised by him and which he was the first to make effective. My attention was at once attracted to this paper. The operation strongly appealed to me as a promising one, and correct in principle.

But I believed that the instrument which he proposed was not altogether well adapted to the purpose for which it was intended. In the first place, the knife being short, straight and rigid, is not readily applicable to the bony canal, entrance to which, moreover, is more or less impeded by the overhanging brow, an obstacle which all who have attempted to pass a straight Bowman's probe have doubtless encountered. Then the rounded cutting point and tapering blade, broadest where it joins the shank, make an instrument which one might naturally shrink from introducing into such a passage.

To meet these apparent objections, I devised an instrument which was made for me by J. H. Gemrig & Son in August, 1869, and which has been subjected to the test of use in my own hands, and some others, during the more than twenty-two years which have followed. The results have been so wholly satisfactory as to lead me to welcome the invitation of the Chairman to present the subject here; especially as I have delayed publishing any account of the matter till now.

The instrument consists, besides the handle, of shank, blade, and tip. Its length, exclusive of the handle, is 5½ centimeters. The shank is of untempered steel, to give it flexibility, and is 4 centimeters in length. The flexibility of the shank is such as to permit the instrument to be bent into any curve found convenient for introduction into the canal and its length such that in operating the handle does not descend below the level of the brow. The cutting blade is 7 millimeters in length and 3 millimeters in width, the whole terminating in a conical tip, blunt at the point, and equal to the blade in length, thus forming a probe, dilator and knife combined. The conical tip serves at once as a guide and a dilator for the cutting blade which follows, and also as a protector of the soft parts during the introduction and withdrawal of the instrument. A considerable experience in urethral surgery, and especially in internal urethrotomy on my own part, had prepared me to regard Stilling's insistence on the analogy between stricture of the urethra and of the lachrymal passages as in the main justifiable; and, I may add, as a false passage in the surgery of the urethra is, under all circumstances, to be sedulously avoided, so in the treatment of lachrymal stricture, like considerations are applicable, and like care is to be exercised. And as in operation for stricture of the urethra by internal urethrotomy incision is properly preceded by dilatation, not as a method of cure, but as a necessary preliminary to the entrance of the cutting instrument into the lumen of the canal, so in incision of coarctations of the lachrymal passages, like precautions should be taken, allowance being made for the difference of structure in the two cases.



From this point of view Stilling's knife appears to be defective; there is no certainty that its rounded cutting-end will enter the narrowed lumen of the duct, and that the downward thrust may not carry it through the tissues alongside of the true passage, and thus force a false one. And a false passage once made, the subsequent incisions taking their start therefrom, may result in the formation of a canal whose wall being devoid of mucous membrane, shall consist of cicatricial tissue throughout. This danger is obviated by the conical tip of the stricturotome here described, serving, as it does, to guide the blade safely into the lumen of the duct, and to dilate the strictured part, so as to allow of the blade's easy passage through and beyond it.

From the foregoing it is clear that, while the initial incision with the Stilling knife is necessarily made as a thrust with a cutting pointed instrument without a guide and is, therefore, to a considerable extent a chance thrust in the dark, the incision with the stricturotome here proposed is a draw-cut from beyond the stricture upward and through it. The incision in the latter case is made at a definite point of selection, the seat of the stricture, and the instrument is at all times under perfect control and ready to be used either as an exploring, dilating or cutting instrument, as the exigencies of the operation may require.

In operating, the first step consists in slitting the canaliculus, the lower if a style is to be used, otherwise the upper. This is accomplished more conveniently with a small grooved director and Beer's knife than with Weber's knife. In making this incision, two points are to be observed: the cut is to be made along the inner edge of the lid, the edge of the knife being directed somewhat backward and toward the eye, so that the groove formed may be in a favorable position to receive the tears; and the opening into the sac must be made sufficiently large to permit the free entrance of the necessary instruments. This latter may be best accomplished with the point of the knife, before the director is withdrawn. An obstructing ledge of tissue is usually found at the inner end of the groove, formed from the lower canaliculus, which offers an impediment to the passage of instruments, and even of tears. This obstruction may be divided later by the stricturotome, during its withdrawal at the close of the operation.

A Bowman's probe, or better still, the flexible probe of Dr. Williams, of Boston, is now to be inserted to explore the canal, and to note the location and calibre of the first stricture encountered. The probe being withdrawn, the stricturotome, well oiled, is introduced, special care being taken to place the point of the instrument within the grasp of the stricture. Strictures impermeable to ordinary probes, and which allow only the passage of an Anel's probe, will be found permeable to the conical tip of this instrument. The tip being engaged in the stricture, gentle continuous pressure is to be made, and the cone carried through and beyond the coarctation. It cannot be too strongly insisted upon that exploration of strictures in this locality is to be conducted with extreme deliberation and patience; all instruments should be introduced by coaxing, and not by force. More than one sitting may be necessary to complete the exploration. The blade having been passed into the free space beyond the stricture, incision is made by a drawing movement upward, completely dividing the tissues at the strictured point, even to the bone, and in at least two different directions. The instrument should then be moved laterally in all directions, to make sure that no narrowing remains; and before withdrawal it should be carried within the nasal fossa as an exploring instrument, to learn if any other stricture be present, and which if found, should also be incised. By far the most common seat of stricture of these passages is at the junction of the sac and duct; only occasionally will a stricture be found at the nasal extremity of the duct. A little bleeding at the nose and at the inner canthus are the only external indications that an operation has been performed. The whole operation is singularly free from pain, and with cocaine the pain becomes quite insignificant.

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[1] Ueber die Heilung der Verengerungen der Thranenwege mittelst der Innern Incision. Cassel, 1868.

Stilling, and those who have used his instrument, describe more or less considerable hæmorrhage from the nose and ecchymosis of the lower lid as the ordinary results of operation, due, no doubt, to the somewhat extensive and unnecessary cutting of healthy structures, which unavoidably attends the use of such a knife as his, but which conditions do not exist in the operation as here described, the incision here being limited to the parts affected.

As regards after treatment, I have usually introduced a large leaden style, measuring 8 to 10 millimeters in circumference with the upper extremity bent at a right angle, and so reduced in size as to drop into the open groove formed of the divided lower canaliculus, where it lies concealed. This is removed at first every day or two while the passage is washed; after the first ten days it need not be disturbed for a week or more at a time. At the end of a few weeks the style may be removed altogether.

Stilling insists that all after treatment, looking to the mechanical separation of the parts with a view to preserving the space gained by the incision, is not only needless but even harmful, in consequence of the subsequent inflammation said to be thus produced; and he therefore discountenances the use of either probes or styles under such circumstances. With this conclusion, however, my experience does not agree, provided that not a vestige of the stricture remains uncut, and that the passage be so large that the style goes loosely into place. Under these circumstances I have found that the style at least does no harm, while in some instances, where the parts are swollen and the cut surfaces are thus kept in apposition within the bony canal, it is likely to prove effective in keeping the several parts asunder. With patients who cannot be under frequent observation, this may prove an important safeguard.

When the style has been removed after several week's wear, and when on replacing it after an interval of a week or two, it is found to pass without impediment, we are safe in declaring that a cure has been effected. Experience in after treatment both with and without the style, leads me to believe that while success is likely to attend both methods, the use of the style, under the conditions noted, is, on the whole, to be preferred.

Although Stilling's operation has been noticed by writers of good reputation in Ophthalmology, from the time it was first introduced to the present day, it appears to have failed so far as England and America, at least, are concerned, to receive the general acceptance which its early promise and its great merits deserve.* Thus, while Soelberg Wells and R. Brudenell Carter both called attention to it — though without definite commendation—in the year following its introduction, Swanzy, in a recent edition of his "Hand Book", after describing the operation, says: "This method has never gained much popularity"; and Berry, in his "Diseases of the Eye", ignores it altogether. To these may be added in this country de Schweinitz, in whose recent work it is accorded scarcely more than a passing mention.

The chief reason of this indifference is probably to be found in the unmechanical and even formidable character of the knife which Stilling figured. Beside this, it was difficult for surgeons to adopt what appeared to be extreme views as to the necessity of abstaining from all after treatment, and upon which he strongly insisted.

The instrument here presented, in connection with the plan of after treatment recommended, is designed to meet these objections. If I shall succeed in getting thorough trial for the operation with the modifications here outlined, from the members of this Section, I am confident that it will, with you at least, supplant the use of probes, and take its place as the most useful and satisfactory method known for the treatment of an affection at times dangerous to the integrity of the eye and often annoying to both patient and surgeon.

As regards those cases in which operation within the duct is determined upon, there is practically but one method now in general use with which a comparison with stricturotomy can be made, and that is the treatment by slow dilation through probing. As between stricturotomy and probing, the superiority of stricturotomy will, I believe, be manifest to anyone who will make trial of the two methods. Stricturotomy promises immediate relief and radical cure, while probing is tedious, painful, usually dilatory, and often finally, ineffectual.

Weber's canaliculus knife, somewhat modified, has also been used for the incision of coarctations situated within the duct. At least two American surgeons have so employed it with the addition of a long shank. While this shank is unquestionably an improvement, if the knife is to be used within the duct at all, in my judgment, this knife, even so modified, is hardly less objectionable than the original Stilling knife. The probe point, in these instruments, as I have seen them, appears to be inadequate to serve either as an efficient guide or dilator and if in use it should fail to engage properly within the lumen of the duct, and a false passage is produced, the result will be a lacerated instead of an incised wound, which latter at least would be made by Stilling's knife under similar circumstances.

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*The same appears to be the case in France. Since my article was written, a paper in the "Recueil d'Ophthalmologie" for May, 1892, by Dr. Chouvel, surgeon-in-chief of the French army, gives the result in fifty cases of lachrymal obstruction by probing. He concludes as follows: "It has seemed to us that it is not without utility to make known the little success which slow and progressive dilatation has yielded in our hands, seeing that this method of treatment is the one which thus far has the most adherents."

Stricturotomy is, of course, not recommended for every case of epiphora, nor yet for all cases of dacryocystitis. In this connection should be mentioned the simple and ingenious suggestion of Dr. George M. Gould, of Philadelphia, who reports[2] having obtained good results through a method by which the patient himself is enabled to wash out the tract with an antiseptic or astringent lotion, with the intervention of a syringe. I have adopted this method in one case with strikingly good results, and believe that in certain cases it may properly supplement, and in others, supplant, operative or other treatment.

As long ago as 1867.Stellwag[3] called attention to the causal relation between disease of the nasal fossæ and antrum and of affections of the lachrymal passage, and advises general and local treatment of any morbid condition found, such as ozena, polypi, or other new growth within the nose or antrum, chronic *inflammation of the Schneiderian membrane, etc.*, and quite recently, good results have been reported by de Schweinitz[4] in epiphora by a systematic examination and treatment of the naso-pharynx. When all has been done however, that can be effected by the rhinologist, a considerable proportion of cases will doubtless remain, which will continue to demand the services of the ophthalmologist.

I quote the following from R. Brudenell Carter written in 1869,[5] calling attention to Stilling's method, and depicting the state of the art at that period: "It is well known that lachrymal obstructions depending upon strictures of the nasal duct, below the sac, are often of a very obstinate character. In some cases, when the canaliculus has been slit up, and Bowman's largest probe passed through the stricture, the difficulty is soon overcome. In others, and I think they form a majority, the stricture soon closes again, and the malady becomes as troublesome as ever. All manner of devices have been tried in vain; and such patients become a source of unmixed weariness at the hospital, and of weariness, mitigated by guineas, in the consulting room. Catgut probes, laminaria probes, injections of all sorts and in all quantities, styles to be worn temporarily, styles to be worn permanently, form only a few of the resources that have been tried, sometimes successfully, but yet with frequent failure, even in skilful and practiced hands. And, if these probings and manipulations were ever performed unskilfully, it could scarcely be expected that benefit would be derived from them."

This somewhat picturesque statement has additional interest, serving to bring home to us as it does, how little progress has been made since that time. Besides, Berry,[6] in his work, thus expresses himself:

"When a stricture exists at the orifice between the sac and the duct, the patient may, after it has been dilated, be taught to pass the probe himself, or, as recently been suggested, and practiced by Benson, he may introduce pewter styles every night, removing them again in the morning. By prolonged treatment of this nature, more or less improvement is generally eventually obtained, but there are always some cases in which this is not the case; in such it is necessary to have recourse to destruction of the sac altogether. . . . . An attempt may always be made to dilate the stricture by the introduction of the probes at intervals of a few days, or by causing the patient to wear styles, but the results are often unsatisfactory; fortunately such cases are comparatively rare."

The following case, from a series reported by Warlemont,[7] may be taken as typical, and well illustrates the striking contrast between treatment by probing and that by stricturotomy.

Mathilde D., æt. 20, has suffered for several years from epiphere of the left eye, for which she was treated by catheterization by Bowman's probes for more than three years (sic). A stricture was found at the upper extremity of the nasal duct, and another at its lower end; probe No. 4 was passed into the nose, but not without difficulty. For the last three years, this young and pretty girl, with a constancy worthy of a better lot, has come once or twice a week to have *the sound passed; the tearing persists, and mucous* shreds are seen to escape from the upper punctum, long since incised, on making somewhat forcible pressure over the sac. In short, the cure threatens to be long delayed.

June 4. Stilling's operation. Incision of strictures made with the greatest care. Nasal hæmorrhage.

June 10. The patient declares that she is better than she has been for three years; no more tearing nor accumulation of mucous in the sac. The slight conjunctivitis which has existed for a considerable length of time has disappeared.

Oct. The cure is complete, and has remained so for the five months she was under observation.

Within the past few days, it has been my good fortune to have an opportunity of examining the first patient upon whom I operated by this plan, now somewhat more than 22 years ago. This lady, who suffered from stricture of the duct, causing dacryocystitis and epiphora, has been perfectly well from the time of the operation to the present day. Pressure over the sac shows no trace of regurgitation, and a large Bowman's probe is readily passed without encountering the least indication of stricture.

Another case illustrating the serious consequences which occasionally follow from lachrymal disease, and the excellent results obtained by stricturotomy, is that of a gentleman from Virginia, sent to me by Dr. Conger, of Oswego Co., New York. He had been under treatment by specialists in three of the principal cities of the country, and for periods varying from 3 to 6 months at a time. He had severe chronic conjunctivitis, dense pannus, with hardly more than light perception, the iris being totally concealed from view. The condition in both eyes was the same, so that he was quite blind and had to be led. He was a business man, and had been compelled to give up his business. After several months of varied but almost futile treatment, I still advised him to remain under further observation, with the hope that a clue might be found that would lead to his relief. During this time he was seen in consultation a number of times by my friend, the late Dr. R. J. Levis. The patient reported that he occasionally found yellowish "worm-like threads" in his eyes, especially on awaking in the morning. My attention having been attracted by this, I was one day led to make a more than ordinarily careful examination of the entire conjunctiva, when, on casually making pressure over the lachrymal sac, I observed a spurt of yellowish muco-pus issuing from both upper and lower puncta of both eyes, which led me to believe that I had found the source of the irritant upon which the disease depended. I slit up the lower canaliculi at once, and incised strictures found at the junction of the sac and duct. The good effect was manifest almost immediately. Within six weeks from the time of the operation, I received letters from him, written at his home, in his own handwriting, informing me that he had resumed business, and was able to read coarse print. It is worthy of note that there had been neither epiphora nor swelling in the region of the sac, nothing in fact to call attention to the lachrymal difficulty. I continued to hear from the patient up to the time of his death, which occurred some years later. The good results persisted; his visual acuity improved still further, and in short, he regarded himself as a well man.

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[2] Journal Amer. Med. Assn., April 23, 1892, p. 529.
[3] Lehrbuch der praktischen Augenheilkunde, 3d Edition.
[4] Journal of Amer. Med. Assn., Apr. 23, 1892, p. 526.
[5] The Practitioner, Vol. 2, 1869, London.
[6] Diseases of the eye.
[7] Annales d' Oculistique, Oct., 1868.

In forming an estimate of the relative value of the two methods under consideration, it is to be observed that by both, a permanent enlargement of the calibre of the duct is the object sought to be attained. In both, increased calibre can be secured only by structural changes in the walls of the duct. But in each, totally different principles as well as procedures underlie the results aimed at. By the process of probing—gradual dilation—the change is sought to be effected through absorption of the tissues forming the stricture, by means of the pressure of the impinging probe, with a redisposition of new tissue elements to compensate for the increased size of the duct. Such a process is slow and tedious at the best, and finally uncertain in its results, and for these reasons practically unavailable. Stricturotomy, on the contrary, at once effects an enlargement of the canal, giving the reasonable expectation of its permanent patency. It may be added that while the canal, as produced by stricturotomy, may be larger than is necessary for the performance of the normal functions of the part, it is certain that the space provided by probing is usually altogether deficient in size. The larger size, in the one instance, however, does no harm, while the small size produced in the other results in the failure of the operation.

In the light of all the facts, I feel warranted in stating my belief that probing as a method of treatment should be discarded. And, also, that stricturotomy, as here described, based as it is upon sound surgical principles and supported by experience, should be substituted for it, and all other instrumental procedures now in use for the treatment of stricture of the lachrymal duct.

Lachrymal stricture treated by this method has, in my hands, during many years, yielded results as satisfactory as those following operation in other parts of the body.

CLOSURE OF THE LACHRYMAL PUNCTA IN DACRYOCYSTITIS AS A BARRIER AGAINST INFECTION OF THE WOUNDED EYEBALL.

Read in the Section of Ophthalmology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY G. A. ASCHMAN, B.Sc., M.D.,
WHEELING, W. VA.

That an unsound condition of the lachrymal sac and duct is a constant menace to the eyeball and, in fact, the most mischievous source of infection, is admitted by everyone familiar with the subject. The pernicious quality of the secretion in dacryocystitis is caused by the copious existence of microörganisms of many varieties, and with the exception of the gonococcus, none are known to be more hurtful to the tissues of the eye. The rule is therefore strictly observed, not to operate for cataract, etc., before any existing lachrymal trouble has been eliminated. Even the slightest corneal wound affords a favorable point of entrance for the virus, and hypopyum keratitis with all its dangers results. The striking fact has been proven that from 20 per cent. to 32 per cent. of the cases of hypopyum keratitis are complicated with dacryocystitis.[1]

As a rule, a person afflicted with some disease of the lachrymal apparatus passes many years of his life without any further annoyance than a constant overflow of tears, which necessitates the frequent use of his handkerchief, and a discharge of muco-purulent secretion, which causes a sticking-together of the lids in the morning. Then, by accident, some foreign body produces an abrasion of the corneal epithelium, and the opportunity for infection is given. At first the eye becomes injected and inflamed and a small yellow spot with ulceration forms at the site of injury. Frequently it is not made much of until pain supervenes, the violence of which induces the patient at last to seek medical aid after several days have elapsed. The physician, frequently overlooking the lachrymal trouble, prescribes cocaine and hot fomentations with some antiseptic wash—but the eye grows worse from day to day. While the ulcer increases in size a yellow precipitate forms at the bottom of the anterior chamber; and it is often only at this stage, after the hypopyum has developed, that the oculist is consulted. It has been my experience to see the great majority of cases for the first time from ten days to three weeks after the injury had been inflicted. Speedy action is now demanded. Sometimes it is still sufficient to thoroughly scrape the floor of the ulcer, dust it with iodoform and to frequently flush the eye with a 1 to 2,000 sublimate solution, to which the use of hot fomentations is added when there is much pain. Cauterization of the ulcer, however, usually proves more beneficial, and it is now generally admitted to be the best means of destroying the germs and bringing about absorption of the hypopyum. But even this will frequently not obviate the necessity of a paracentesis or a Sæmisch operation. Only after the pus has been evacuated and the necrotic tissue eliminated does healing often begin, and after several weeks the eye recovers with a more or less large leucoma. But there is still a number of cases (according to different statistics from 9.5 per cent. to 19.2 per cent.[2]) especially in old and debilitated persons, where, in spite of the above treatment, the ulcer increases, staphyloma forms or the whole cornea is ravaged, and suppuration extends to the interior of the globe. It has appeared to me that, while all these active measures are being directed against the pus in the eyeball, sufficient attention is not paid to the source of infection, viz., the lachrymal apparatus. All our efforts may be entirely neutralized as long as there is a chance of renewed entrance of infectious material. To be sure, it is generally advised to add treatment of the sac and tear duct, to slit the canaliculus according to Bowman's teachings, to pass the probe and syringe the duct with antiseptic lotions. But we all know how long it often takes to cure dacryocystitis, if it can be cured at all, and before this is accomplished and the last pus germ eliminated, the eye may be destroyed. Even though we freely open the tear sac, evacuate its contents and treat its surface with strong antiseptic solutions, the source of trouble may be further down in the duct, or even in the nose. The importance of attention to intra-nasal lesions in obstructive disease of the lachrymal apparatus has recently been emphasized by Dr. de Schweinitz[3] in a paper read before the Philadelphia County Medical Society. A number of cases are cited where intra-nasal treatment was necessary to cure the lachrymal trouble. But this also requires considerable time, whereas the infected corneal ulcer calls for speedy action. With regard to obliteration or excision of the lachrymal sac, it must be admitted that it would be the most efficient means of eliminating the virus. But it is quite a violent and painful operation, not to mention the time required for healing, so that the patient, now weak and debilitated by constant suffering, would hardly agree to submit to it. The question has, therefore, presented itself to me, if it were not feasible, after disinfecting all implicated parts in the best possible manner to quickly and effectually close the lachrymal puncta. Could this not be accomplished, at least temporarily, until the danger is over? Allow me to make my answer by shortly citing a few cases:

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[1] Noyes, Diseases of the eye, page 366.
[2] Noyes, loc. cit.

Case 1.—Mr. W. V., 63 years old, farmer, ten or eleven days ago while cutting corn something, probably a particle of a blade of corn,got into his right eye. It pained him at once and he tried to rub it out. The same eyeball had been inflamed twice before but recovered in a few days. As then, he made cold wet applications during the night and felt better in the morning. But the following day the soreness returned and gradually grew worse. In spite of several home remedies the increased pain began to extend to the forehead, temple and right side of head. Noticing, after a week, that the eye had almost completely lost its vision, he came to Wheeling and consulted Dr. I. P. Birney. The doctor at once applied cocaine and antiseptics, telling him the eye was probably lost, and on the following day, October 6, 1891, sent him to me. I found an extensive infiltration of the central portion of the cornea, in the centre of which was a small wound covered with pus. About one-third of the anterior chamber was filled with hypopyum, and on pressure over the inner angle of the eye a large drop of thick muco-pus gushed from both puncta. The man was very feeble and debilitated, as he had suffered intensely and not slept for three nights and days. I first thoroughly flushed the conjunctival sac and eyeball with a corrosive sublimate solution 1 to 3,000 and tried to empty the lachrymal sac as much as possible by pressure. After the instillation of cocaine and atropine I introduced a fine Bowman probe through the lower canaliculus, without slitting the latter, and a stricture was detected about half-way down the duct. After thoroughly washing out the sac and duct, as far down as possible, with a pyoctanin solution 1 to 1,000 by means of Anel's syringe, I scraped the floor of the ulcer and dusted the whole with iodoform. The existing chronic nasal catarrh was properly attended to and the usual directions given for home treatment. The following day less pain was reported. but the ulcer and hypopyum had increased somewhat, so I cauterized the former extensively, after which, for the next two days, it seemed to get smaller and pain less severe. While the treatment of the sac was constantly continued the discharge became gradually of a less purulent and more mucous nature looking exactly like the white of an egg. The hypopyum did not diminish, however, and the patient still had some severe spells of neuralgia. So I decided to make a Sæmisch operation. After the aqueous had slowly flowed off I managed to remove the hypopyum with an iris forceps. But in spite of all antiseptic precautions the corneal wound did not close, and after two or three days I found a yellow infiltration of its edges and pus beginning again to accumulate in the anterior chamber. While I was preparing to cauterize the edges of the wound, it occurred to me to go further back towards the source of the trouble and see if I could ward off the lachrymal discharge by closing the puncta with the electro-cautery. After injecting cocaine, I pushed a fine wire about ⅛ of an inch through the puncta and closing the current, brought the point to a red heat, which after a few seconds was slowly withdrawn. My expectations were realized, as the resulting burn of the mucous lining brought about a firm adhesion of the walls of the canaliculus. That the connection between the lachrymal and the conjunctival sac was now entirely interrupted was proven the following morning, when I found a slight swelling over the site of the lachrymal sac, light pressure upon which did not drive any discharge through the puncta. The corneal wound had a better aspect and under antiseptic applications the beginning hypopyum disappeared in another day. Repair began and the eye rapidly mended, while, at the same time, the swelling of the lachrymal sac increased very slightly. A week afterwards, thinking the corneal wound sufficiently closed, I reopened the lower punctum with a pointed probe and evacuated the accumulated mucous. The patient left for home the following day in good spirits, not caring about any further treatment of the lachrymal duct and nose, which I had advised. I have since learned that in spite of a large leucoma, the eye has regained a small amount of vision.

Case 2.—A. H., 42 years old, of Kingwood, W. Va. February 6, 1892, he was working on his farm with a hoe, when his right eye began to pain him; but he does not remember having been wounded. The same evening inflammatory symptoms became worse, and pain and headache continued to increase from day to day. He was treated at home for two weeks, and then came to Wheeling, when he was at once referred to me by Dr. Ackerman. Diagnosis: Advanced hypopyum keratitis. Small corneal ulcer at the inner quadrant, and the anterior chamber at least half full of pus. Profuse purulent discharge from both puncta, which the patient said had existed for many years without giving him much trouble, as he had always been able to empty the sac by squeezing its contents into the nose. The same treatment was at once instituted as above, only that I was able to syringe the whole duct, the antiseptic fluid escaping from the nose. The following day both puncta were closed with the red-hot wire, and a Sæmisch operation performed, which entirely evacuated the pus. The eye began to recover at once without any accumulation of muco-pus in the sac, as the patient was directed to keep it empty by frequently squeezing the contents into the nose. During that time it was peculiar to notice an increase of discharge from the puncta of the other eye. After ten days I reopened the lower punctum, and the patient, anxious to return to work, left for home after a sojourn of a little over two weeks. The resulting corneal scar was comparatively small, and he promised to return soon for further treatment of the lachrymal trouble. His physician has recently written me that his eye is doing well, epiphora being noticed only at times.

Case 3.—M. M., 48 years old. While breaking limestone, he noticed that his right eye became painful, and the following day vision had considerably diminished. He was compelled to quit work, and, as the pain increased, he came to see me May 1, 1892, five days after the first symptoms. I found an ulcer in the centre of the cornea, with surrounding gray infiltration. Slight degree of dacryocystitis, but no hypopyum. I cauterized the ulcer with the hot wire, closed the lachrymal puncta, prescribed hot antiseptic compresses and atropine, and the eye was well in less than a week.

With regard to the means of interrupting the connection between the diseased lachrymal passages and the conjunctival sac, I remember having read the description of a clamp which would tightly compress the canaliculi. But I have not had sufficient faith to try it, considering that the pus cell will manage to creep through the smallest aperture. Prof. Eversbusch[4], of Erlangen, recently reported a method by which, in cases ready for cataract operation, where there was suspicion of a diseased condition of the lachrymal passages, he had closed both canaliculi with catgut ligatures. He declared thereby to have prevented all possibility of infection, which was proven by the good results obtained. The electrocaustic closure of the puncta, however, appears to be much simpler and surer.

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[3] Journal of the Am. Med. Ass., April 23, page 526.

[4] "Ueber die Anwendung der Antiseptica in der Augenheilkunde," Centralblatt fur Augenheilkunde, December, 1890, p. 354.

Shortly after discharging Case 1, I found in the *Centralblatt für Augenheilkunde* the review of an article by Prof. Haab,[5] of Zurich, in which he describes a procedure of closing the lachrymal puncta with the galvano-cautery, to prevent infection, before operating for cataract. His examination of cataract patients is completed in all cases by syringing the lachrymal passages, and whenever the slightest narrowing or discharge is detected, he closes the puncta with the electro-cautery the day before the operation. This, together with other proper antiseptic precautions, has enabled him during the past few years to remove a number of cataracts in spite of the presence of dacryo-stenosis, with excellent results. In fact, he declares that this complication, which is generally regarded as a *noli me tangere*, has now lost for him all its dangers. As I have a case of almost mature cataract, where the other eye was lost by suppuration after operation performed by another surgeon, no doubt resulting from still existing dacryocystitis, I intend trying this method, with the consent of the patient. Safety will be enhanced by postponing the extraction a day or two, until complete obstruction of the puncta is surely demonstrated. It would certainly be a benefaction not to be obliged to refuse such persons an operation, thereby condemning them to permanent blindness.

TREATMENT OF KERATOCONUS BY MEANS OF THE GALVANO-CAUTERY AND IRIDECTOMY.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY ROBERT D. GIBSON, M.D.,
OF YOUNGSTOWN, O.

My object in presenting this subject is to get more light.

I have been unable to find any literature upon the subject which gives anything encouraging in the way of treatment.

In October, 1890, while a student under Dr. Knapp in the New York Ophthalmic and Aural Institute, it was my fortune to witness him treat a single case, with small central opacity, by paracentesis with the galvano-cautery needle. I did not see or learn of the results in Dr. Knapp's case, but accepted it as *theoretically* the most likely to give good results, and have tried it in two cases, the results of which I beg to submit for the basis of discussion.

As no definite results are reported, I have nothing with which to compare my results, but trust that they are at least worthy of consideration.

The literature on keratoconus is meager and widely scattered, so that it would be wellnigh impossible to present an acceptable review of the subject, upon which to base our remarks.

As to the cause of the disease we know but little or nothing, except that for a period ranging from a few months to a few years previous to the time vision began to fail, there is a considerable lowering of the vital energies from some cause or other.

As to the exact bearing this would have on the cornea, it cannot be definitely shown, but doubtless the condition present would be analogous to that which in some other person would terminate in ulceration of the cornea (either superficial or interstitial).

The tension is not increased in the least, but on the contrary, it is diminished. In case the tension were increased the curvature of the cornea would be lessened, that is, the eyeball would become a more perfect sphere, and the cornea would no longer maintain the curve of a sphere having a shorter diameter than that of the eyeball. If increasing the tension will produce less curvature of the cornea, surely a subnormal tension must be present to *admit of* increased curvature. And upon examination the tension is found to be subnormal.

The course of the disease is usually slow; the first manifestation being failing distant vision. As the disease progresses there is greater impairment of vision, and in case there is interstitial degeneration the cornea will become hazy, and vision will be reduced to perception of light. The first manifestation of interstitial degeneration may be seen by means of strong oblique illumination (using a large lens). Fine lines may be seen at the apex of the cone, which resemble the lines on crazed glass; these lines increase in number and coalesce till they present the appearance of extensive interstitial ulceration.

This ulceration seems to be confined to the "*substantia propria*" and possibly the anterior "basal membrane," or what is known as the "scleral division" of the cornea, but cases have been reported where the cornea became so thin that they ruptured spontaneously.

The diagnosis in the early stage may be made by means of the ophthalmoscope or Placido's disc. With the ophthalmoscope the optic disc seems kite-shaped, as are also the rings of Placido's disc as seen reflected from the cornea. The parallactic movements may be seen by moving either the head or objective lens. In the advanced stages, the deformity of the cornea is quite noticeable. The full front view of the eye presents a clear, watery appearance, due to the deep anterior chamber and the reflection of light from the surface. The profile view is similar to a cone, therefore the name keratoconus.

During the past six months it has been my privilege to have two cases (three eyes) of keratoconus under my observation.

The first is still clear, though the deformity is quite noticeable and vision is reduced to $\frac{2}{200}$.

The history is: Mrs. U., æt. 22 years, at 15 years of age was thrown out of a carriage on to the road by a runaway team, struck the right side of the face on the ground, both arms were broken, and was otherwise injured so that she was confined to bed for three months. After getting out she noticed the vision of the right eye was failing, and it has resulted in keratoconus.

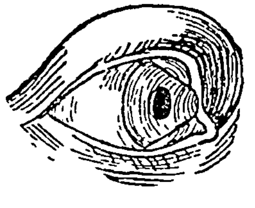

FIG. 1.

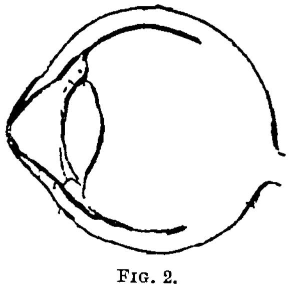

FIG. 2.

The second patient had double keratoconus. The right eye presented a very unfavorable appearance; the cornea protruded to the full extent possible (Figs. 1 and 2), the opacity extended on all sides of the apex so as to completely cover the pupil, the central portion of the cornea was extremely thin (Fig. 2), and vision was reduced to perception of light only.

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[5] Bemerkungen zur Staar Operation, November and December, 1891.

The left eye presented the deformity to the same degree, but was still clear. By strong oblique illumination interstitial degeneration could be determined by the prèsence of two or three fine lines, at the apex. Vision was 4-200. Her history is as follows:

Miss Sarah S., æt. 22, farmer's daughter, came to my office December 21, 1891. General health not very good; has been ailing since 16 years of age; menstruation irregular, varying from six weeks to sixteen months. Eyes began to fail at about 17 years of age; both failed alike, till a few weeks ago the right "seemed to go all at once."

On account of the failing condition of the left eye, and the fact that the right eye was already useless, it was thought best to operate on the right eye at once (December 21, 1891). Paracentesis of the cornea was performed at the central point with the galvano-cautery needle. The central portion of the cornea was so thin that it wrinkled up or collapsed as the anterior chamber was evacuated. The eye was opened but once each day for inspection. At the end of eight days (December 29) the opening had closed. The cornea had receded about halfway back to the normal curve. The eye was again cocainized and a slightly larger opening made at the same point with the galvano-cautery needle. Kept the eye closely bandaged and patient in bed for eighteen days, inspected the eye once each day, and at the end of eighteen days the opening had entirely closed and the cornea had receded to the normal curve (Fig. 3). The extensive opacity was largely absorbed, but a central opacity nearly the size of the pupil still remained after two months. There was very good vision excepting in a bright light, when the pupil would contract. She could see to read the headlines of the newspapers, and tell the time on my watch to the exact minute. V. equals 20-100. March 18, 1892, an iridectomy was made, inward and slightly downward (Fig. 4), resulting in vision 20-50 +, with + 5 .50 D. cyl. axis 15°. The fact that a *plus* 5 .50 D. glass is accepted would indicate that the cornea must have receded to, if not beyond, its normal position.

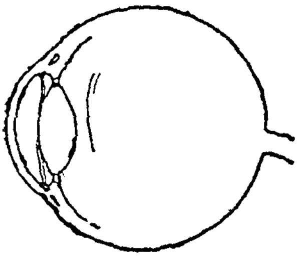

FIG. 3.

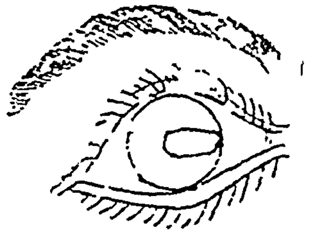

FIG. 4.

The vision of the left eye, in the meantime, was failing on account of the central opacity increasing. It was thought best not to wait till the opacity would become so extensive as in the right eye, therefore the eye was treated after the same manner, and with nearly as good results, as the right eye. V. equals 20-50 —, with — 8.00 D. sph. ⊃ — 3.00 D. cyl. axis 120°. The cornea of the left eye had not become perceptibly thinner than the normal, therefore presented greater resistance to the compress and contraction, and resulted in less correction of the deformity than in the right eye. The result is so good, however, that I hesitate to continue further treatment, but am quite confident that by repeating the puncture once, or possibly twice more, we would be able to get rid of the concave spherical lens.

By making the opening at the central point of the cornea there is no danger of prolapse of the iris.

The advantages of making paracentesis with the galvano-cautery needle are:

1. Perfect antisepsis or asepsis.
2. Prolonged drainage of the anterior chamber.
3. The resulting opacity is reduced to a minimum.
4. There is doubtless some shrinkage of the cicatrix, which would tend to reduce the curvature of the cornea somewhat.

The advisability of performing iridectomy must be governed by the extent of the opacity. I am quite well satisfied that the operation for iridectomy in these two eyes had very little, if any, effect on the curvature of the cornea, and might have been dispensed with, except from the fact that the opacities present before performing paracentesis with the galvano-cautery needle, were large enough to materially interfere with useful vision.

Discussion.

Dr. Henry D. Noyes, New York:—I have been interested in conical cornea for many years and have examined many cases. In the first place the projection of the cornea is often not central. It more frequently is below the horizontal meridian. This is chiefly due to the pressure of the eyelids.

The essential pathology of this condition is that it is not due to intra-ocular tension, but is a process of atrophy of the cornea, and protrusion takes under the normal prèssure. This is aggravated by the action of the lids.

Furthermore, these cases, while in a general sense myopic, are susceptible of amelioration in the early stages by glasses of a peculiar character. The glasses best suited are generally convex cylinders. A mixed cylinder with axis at a right angle will often answer well. Examination for astigmatism by the ordinary methods is exceedingly unsatisfactory. There is no use of giving atropia, because in this way you expose a larger surface. The best way is by the stenopaic slit and the method of Thompson who uses two lights and a disk with a little perforation. Then the ophthalmometer comes into play to show the curve of the cornea.

There is still another fact. I labored for a long time over a patient and finally found a glass that gave satisfactory vision. She wore it for a day or two and then rejected it. She finally selected at an opticians a concave cylinder which differed from all examinations and wore that glass with comfort. Hence we must sometimes work by rule of thumb for such patients.

Bowman pointed out the irregular curve of the cornea and many of its phenomena. When the suggestion of using hyperboloid lenses was made by Rachlman, I tried them in a number of instances. Although hypothetically these cases should assume a curve which is some form of a hyperbola, they quickly depart from the hyperbola. The hyperbolic lenses did not answer in my experience, but others have been more fortunate.

In regard to the possibility of the rupture of conical cornea, this is one of the rarest of accidents. Many years ago I saw a conical cornea, three-fourths of an inch long, in a woman from St. Louis.

The surgical treatment is a matter of history from an early period. Graefe was the first to try to cure these surgically. He employed nitrate of silver and paracentesis. The galvano-cautery is classical in the books. It is a well-recognized method of dealing with this affection.

Excision of a piece of the cornea has been resorted to. I did it once. I found that I could excise a flap and put in sutures as in a plastic operation on the skin. The patient recovered with good vision. I do not know that I shall ever do it again. I had a set of Dr. Williams' needles. I left the sutures in three days. I should have removed them in two days, and the fistula that occurred and continued a few days would probably not have formed.

There is an optical phenomena in conical cornea to which I may refer. If you take a cornea with a considerable amount of conicity and illuminate the eye by a convex lens normal to the axis of the eye and station yourself on the temporal side at right angles, you will get a reflex from the back of the cornea coming into your own eye. This is the result of total reflection from its posterior surface.

Dr. H. Knapp, New York:—Dr. Gibson mentioned that he did not see the result of the operation. That case turned out very well. The patient made a long recovery and for six weeks there was constant breaking of the cauterized portion. I was in dread that suppuration would occur. The opening closed permanently leaving a scar somewhat below the centre of the cornea. In the second month after closure the sight was poor, but in the course of six or eight months the cornea flattened so that there was exceedingly satisfactory vision. I operated subsequently on his second eye and to avoid the long healing, thought that I would make the paracentesis of the cornea smaller. I cauterized a small portion and then pierced the center with the ordinary cautery. Only a drop of aqueous escaped. That wound closed soon enough and did not reopen. The operation, which was rather prolonged, was followed by iritis of a peculiar kind and about three weeks later, I saw in the lower part where the heat had acted most intensely, a yellowish substance which was inexplicable to me. It was not pus. The iritis continued for six weeks or two months, and I feared the occurrence of sympathetic ophthalmia. The mother of the patient, said to me one day "the best of bad things is that what we fear, commonly does not occur." I thought that this was a word of comfort which I might take for my further guidance. This yellow spot developed into a cataract, which I removed later, and the sight, with glasses, was perfect. The curvature of the cornea had become normal. That was three years ago, and the boy is able to use his eyes without trouble. He is a student at Yale College.

The next case I operated on with a galvano-cautery electrode which I had made for the purpose to avoid its prolonged application, for I was afraid that the cataract in the other case might have been caused by the heat. There had been nothing else to cause the cataract. The new electrode, which had an oval end plate, I applied a little below the centre of the cornea, simply turned on the current and cauterized to the depth that I wished. I pierced the place with a pointed tip. The opening closed in five or six weeks. Recovery was good and the result satisfactory.

In the third case I pursued the same method. This was followed by prolapse and iritis. The perforation and the ulceration resulting from it were opposite the lower part of the pupil, and the iris became attached to the cornea. I think that in this case, iridectomy will be advisable.

In two other cases, I operated with the same electrode without piercing the cornea. They have been completely satisfactory, and gave me no anxiety from slow healing or suppuration. The cornea flattened at once, but bulged again when the ulcers had healed. I cauterized again at the same place. Recovery good; corneal curvature normal. Sight excellent, viz.: 20-30 in one, the other not yet finally tested.

All these patients had their far point at one inch. They can read now from nine or twelve inches without glasses.

From my experience I am inclined to consider this as the best method with which I am acquainted—that is, the galvano-cautery without perforation, and if the flattening of the cornea is not sufficient, a repetition of the operation.

Dr. Edward Jackson, Philadelphia:—I think that Dr. Gibson's reasoning in regard to the mechanism of conical cornea is a little defective. If the membranes were uniform in their power of resistance throughout, the influence of tension increased or decreased would be to cause flattening of the cornea. I think, as said by Dr. Noyes, that the central fact in conical cornea is thinning and atrophy of a portion of the cornea, not always in the exact centre, but usually removed a considerable distance from the vascular supply, from the corneal margin. Still, I agree with the author that the tension is usually low, but I do not think the diminished tension is essential to the increase of the curvature.

In reference to the optical correction of conical cornea, the central fact is that the refraction varies from point to point in the cornea. Only in small areas is it uniform. Only a small area will be corrected by any one glass. Of course the glass given must be the one that corrects the portion of the cornea opposite the pupil when it is considerably contracted in near work, or in a bright light. We must select the glass for a small pupil. Dr. Wallace, of Philadelphia, has suggested the use of eserine or pilocarpine; and they can be used with advantage, to find the glass adapted to conical cornea, because they reduce the pupil to the condition in which it will be in near work. I have found more satisfaction from placing the patient in a bright light and making the test at the ordinary distance. In getting at somewhere near the proper glass, retinoscopy is valuable. By it you can make a general survey of the pupil, and select that part which is exposed when the pupil is contracted and has the most uniform refraction, and then choose the glasses to correct that portion, to be confirmed by the subjective test.

Dr. Julian J. Chisolm, Baltimore:—As far back as 1881, I reported my first case of cautery operation for keratoconus. I have performed the operation frequently. In my experience, the larger the needle and the larger the opening made in the cornea, the longer it takes to close, but the more flattening is secured and the better final results obtained.

As to irregularity in the acceptance of glasses for keratoconus, this is a well recognized fact. Sometimes cylinders selected at random give the best results. As strong as 10. + D. + cylinders at an accidentally discovered angle have been selected by a patient as giving the best vision. I have also observed that often the best result was secured through the stenopaic perforation. For some years I have used daily the eserine drop, because the shrunken pupil gave much better vision than the most carefully selected glasses. Half a grain of eserine to the ounce of water, instilled daily into the eyes by the patients themselves, often gives more comfort than glasses.

Dr. G. C. Savage, Nashville:—As to the early diagnosis, I learned eight years ago, while in the Royal Ophthalmic Hospital of London, that with the retinoscope we could detect a beginning keratoconus. I have not seen this referred to in any book. Seated as we usually are in using the retinoscope, and moving the mirror from right to left and up and down, and deflecting the light with or against the movement of the mirror, you will find that if there is slight conicity, the light makes a circular movement. In this way I have often determined its presence and been able to adopt measures for the prevention of further development.

Dr. Robert D. Gibson, Youngstown, O.:—I am glad to have had the opportunity of listening to this liberal discussion. In our literature on this subject no *definite* results are given, and there is nothing with which to compare results. The results are stated as "satisfactory." I should like to know the *exact vision* obtained. To say that we have had "good results," without giving the exact vision, is rather indefinite.

Whether the atrophy of the membranes is a cause or an effect of the deformity, I am unable to state. If it is the *cause*, what are the evidences to support the theory? I merely mentioned it as one of the conditions present.

RESECTION OF THE OPTICO-CILIARY NERVES.

Read in the Section on Ophthalmology at the Forty-third Annual meeting of the American Medical Association, held at Detroit, June, 1892.

BY JULIAN J. CHISOLM, M.D.,
OF BALTIMORE, MARYLAND.

This operation, which is so valuable in many cases, seems to have been abandoned by some ophthalmic surgeons, without sufficient cause. That accidents follow any operation, even the most simple, is an every day occurrence; and in the nature of things must be occasionally looked for. Under careful manipulation, which every surgeon is expected to exercise, failures should become more rare, and therefore should be very seldom met with. Simple nerve section, as a surgical procedure is not always a radical method of relieving pain. Even when a considerable portion of a nerve has been excised, sensation has been in time regained, with a return of the suffering for which the operation had been undertaken. To this experience the ciliary nerves are not exempt; and yet they possess so many peculiar advantages for a successful section. Their location, so easy of access; their isolated surroundings; the small extent of incision required; the small amount of blood lost; the loose connective tissue in which the nerves are imbedded, permitting a considerable separation of the divided nerve ends by the accumulating blood pushing forward the eye-ball and forcing backward the socket tissues; then the displacing of the delicate ciliary nerve threads when pressure is made on the protruding eye-ball by a firmly tied bandage, are all most valuable considerations for securing a favorable result.

In nerve section, as usually undertaken, the nerve is either imbedded in a dense fibrous tissue, so that the separation of the cut ends must be very limited unless they are dissected away from each other; or the affected nerve traverses a bone, and therefore is difficult of access; or it accompanies a large vessel and is necessarily dangerous to divide unless isolated by a careful and often tedious dissection. The nerve attachments of the eye seem especially arranged for easy section. They are clustered together in a very isolated manner. For a long distance they traverse the central axis of an ample cone which is only filled by an unimportant cellular tissue. In the midst of this they can be easily, speedily and surely reached, without detriment to any important structures, if ordinary care is taken by the operator. The contiguous vessels are all small, consequently no serious hæmorrhage is to be feared. The very looseness of the fatty tissues upon which the eye rests facilitates the wide separation of the nerve ends, when the escape of blood from the divided vessels accumulates in the socket. This blood pressure so disarranges the free ends of these conducting threads that their readjustment is very improbable; and yet we know that this reunion does sometimes take place. This is the only accident that should follow this simple, safe, and useful operation.

I do not propose in this paper to give a detailed history of optico-ciliary neurotomy; nor the various methods adopted by surgeons to divide or resect these nerves. With such you are all familiar. My object is to give my own personal experience with this operation from the year 1879 when I first performed it. From that time I have used it annually, as proper cases offered, until my experience now covers eighty-one operations; a sufficiently large number to draw safe conclusions from. In my early practice I tried the various methods of muscle section to facilitate the exposure of the nerve. I soon found that they complicated needlessly the operative manual, and made a very tedious and serious operation of what should be a very speedy and simple one. When the muscles were tenotomized, and afterward sutured, the tension put upon the threads by the blood clot accumulating behind the eye-ball would often tear out the sutures, or so stretch them as to produce an ugly strabismus; an after result that is not satisfactory.

As I was performing this nerve section only for the relief of pain, I did not see the need of taking away a piece of the optic nerve; nor could I see what special advantage would ensue should I bring this nerve under observation while I was dividing it. Therefore at a very early date I abandoned all needless manipulation, and adopted the simplest way of finding the nerve, with the least disturbance of the eye attachments.

I found that the nerve could be easily reached through a conjunctival incision made at the inner or outer canthus, below or above, and parallel with the inner or outer rectus muscle. This method I have exclusively adopted for many years. It makes the the operation so easy to both surgeon and patient that it might be utilized in every case of a comparatively goodlooking, lost and painful eye, which would otherwise be condemned to enucleation. It was never intended by a neurotomy to replace. in all cases, the removal of injured eyes. The majority of lost and painful eyes are so disfigured by the accident, or by subsequent inflammation, that they are not worth preserving. There are still left in the list of lost eyes quite a number, so little deformed, that no one would willingly give them up, were they not the cause of constant suffering. It is for this class of eyes that the operation of neurotomy is so especially applicable.

My method of procedure is as follows: A general anæsthetic is always administered. I have used cocaine for socket operations, but it has never given, to either myself or the patient, the satisfaction expected. For neurotomies, which are quick operations, I use the bromide of ethyl, because of its prompt and evanescent action. After a very few full inspirations of the ethylized ether, during a period that does not exceed one minute of time, the patient is completely anæsthetized. The eye is then thoroughly washed by a chloride lotion. A speculum keeps the lids apart. A fold of conjunctiva is caught up by the forceps, and is cut across in such a way as to make a horizontal incision, which extends from the lower and inner border of the cornea to near the caruncula. It lies parallel with the lower border of the inner rectus muscle, and is but little more extended than the conjunctival incision for squint operations. The application of the points of the scissors in this orifice opens the capsule below the rectus muscle. An instrument terminating in two small hooks is passed into the depth of the wound, and planted well back in the sclerotic. By drawing upon this instrument the eyeball is rotated forcibly outward, which brings the optic nerve with its important ciliary nerve surroundings, within easy reach. The curved enucleation scissors is now introduced through the wound into the socket directly behind the eyeball. With its closed blades, playing the part of a probe, the resistant optic nerve cord is sought. When it is found, by drawing the scissors forward until the nerve escapes, then opening the blades widely, the optic nerve with its entire surroundings can be caught in the jaws of the instrument. The resistance made during the section is proof the nerve has been seized; and if the scissors have been properly manipulated it ensures the complete division of the entire bunch of nerve cords. As an evidence that this has been accomplished the closed scissors, used as a probe, can now move freely in all directions behind the eyeball without meeting any impediment. To secure this complete severance of the nerve bundle needs some familiarity with the resistance which the optic nerve makes to the section. The scissors must not be allowed to slide backward during the section, but the jaws of the instrument must be held firmly against the resisting body. The operation is now completed and the scissors are withdrawn.

In the minute necessary to perform the entire manipulation, blood has been pouring out of the divided ciliary vessels. It has been pushing the eyeball forward, and it has also been escaping from the wound. If this hæmorrhage be not at once stopped the eye would become exceedingly prominent, in forced exophthalmos, with quite enough tension to cloud the cornea and threaten its future safety. Without loss of time the speculum is withdrawn, and a large compress is firmly secured over the eye by a bandage. In one or two minutes consciousness returns, and the patient goes to his bed. As the after pains of the pressure bandage are annoying, a hypodermic of morphia is administered before the patient leaves the operating table. Pressure over the eye is kept up for several hours, or until all hæmorrhage from the divided vessels has ceased. This heavy compress is exchanged the next day for a simple dry dressing. Blood always infiltrates the conjunctiva and the lids, so that the surroundings of the eye are very much blackened from extravasation. It requires at least two or three weeks before this discoloration is altogether removed. The pains in the eye disappear promptly with the nerve section; and in my experience, permanent relief is usually secured.

The patient has had preserved to him a good-looking eye, that is worth all the risks of having the pain return to it at some future time, when the more radical operation of enucleation, if demanded, can be performed. Should this second operation not be required, he has been saved the constantly present thought of the mutilation which he has been subjected to, and which embitters his entire future life. He also escapes the daily annoyance of using an artificial eye, which gives a lot of trouble, as every wearer of one only too well knows.

Too many dangerously painful, but still good-looking, eyes have been ruthlessly enucleated, when this much to be preferred operation might have been substituted. I am fully aware of the many accidents which have occurred in the practice of ophthalmic surgeons—how hæmorrhage has been excessive; how dangerous and even fatal cellulitis has followed the exposure of the orbital tissues; how the cornea has sloughed; how the eyeball has in time become atrophic; and how endless troubles are engendered as the sequel of this operation. I will only say that in my experience no such accident has ever happened. I may have avoided many of them by using sterilized instruments; also by discarding at an early period the more serious exposure of the socket tissues by not doing myotomies, nor being desirous of bringing the optic nerve into view, so as to make the section, as it were, under the eye. I always felt that this bold, I am rather disposed to call it rash, dissection invited the serious accidents which afterward followed.

Unfortunately, I am not able to trace all of my cases. Several of them I have seen years after the nerve section. They had enjoyed life undisturbed by any return of pain. Others had promised to report promptly any returning discomfort. From these I have not heard, and therefore I presume that they have had no recurrence. In only four cases, coming to my knowledge, has it been necessary to resort at a later day to enucleation. There may be other cases in which this secondary operation may have been required. Had it been in many, I would certainly have heard of some of them.

In suitable cases of good-looking, lost, and painful eyes, I feel assured that neurotomy is far preferable to the mutilation of enucleation. I think that this statement will be accepted by all without a dissenting voice, if the dangers which some have encountered can be avoided. This can be in a measure secured by adopting the simpler operation, which in my experience is equally effective, when it is properly performed, as the more complicated ones, and with much less risk. It is also an operation which even the most timid patient will accept, when they would refuse to have an eyeball removed.

Notwithstanding the dangers ascribed to neurotomy, many of which are avoidable, I think that it would be well if surgeons who have discarded this good operation would again replace it on their list of available methods. Knowing its defects, and also being familiar with its advantages, were I required to make a choice between these two operations, enucleation or neurotomy, for a member of my own household, I would not hesitate an instant in the selection. I would accept the neurotomy.

114 West Franklin St., Baltimore, Md.

Discussion.

Dr. Eugene Smith, Detroit:—I regret that my experience does not correspond with that of Dr. Chisolm. I began the use of this operation in 1887-8, but soon stopped it. I had a pair of curved scissors made to fit around the posterior portion of the eye ball. I first began after the method of cutting the external muscle, and found the operation complicated. I then simplified the operation by making the incision beneath the external rectus muscle, and carrying the scissors behind the eye ball. The scissors hug the posterior surface of the eyeball very closely, and cause little mutilation. In no instance have I had an unfortunate result except the subsequent atrophy of the eye. There is a lady in this city on whom I operated at that time who wears an artificial eye. In almost every instance the eyeball has softened and generally atrophied to such an extent as to cause the patient to prefer an artificial eye, but it does make an elegant stump for an artificial eye. Since then I have abandoned the operation.

Dr. Samuel Risley, *Philadelphia*:—In what proportion of this large group of cases was the operation done for sympathetic ophthalmia? Were all the operations done for the relief of pain? This seems to me to be a very large number of eyes to be still painful, and yet present other conditions justifying optico-ciliary neurotomy. One of the most interesting and important causes for which it could be performed would be to save the eyeball in sympathetic irritation.

Dr. F. C. Hotz, Chicago:—I have never performed optico-ciliary neurotomy, and was therefore anxious to hear the paper in order to perhaps learn enough to induce me to perform it. I must confess that I am rather disappointed in my expectation, for if I understand the reader, his main indication for performing optico-ciliary neurotomy in place of enucleation is the painful condition of a good looking eye, where the eye is in such a condition as to make it worth preserving on cosmetic grounds. In the painful eyes that I have seen there has always been so much internal trouble that though the eye may have presented a pretty good appearance at the time, there was reason to expect that there would be a change in the appearance for the worse and therefore I have considered it better to enucleate at once.

Dr. S. C. Ayres, Cincinnati:—I would ask Dr. Chisolm whether the eyes on which he operates are blind from injury or inflammation? Does he enucleate the eyes that may become blind from any cause?

Dr. Julian J. Chisolm, Baltimore:—These neurotomies were designed for the protection of the patient, both from immediate suffering and the dangers of sympathetic trouble. The cases belong to both classes, those in which the sight has been lost from disease or by accident. We know that there are many wounds of the ciliary region afterwards accompanied by inflammatory trouble in which there is great danger. We find the patient suffering with pain, and we are not sure that sympathetic trouble may not follow. These eyes are often good looking. We know that if the patients could preserve their lost eyes without suffering, they would not seek any surgical interferrence. These eyes are often painful. I do know that in many of these instances where I have divided the nerve, a still good-looking, painless, anæsthetised eye is retained where otherwise it would be condemned to enucleation.

The operation is applicable to large numbers of eyes. Take that large class of absolute glaucoma. No one would be willing to give up a glaucomatous eye if they could painlessly keep it. These eyes are often very painful, the pupil enlarged and the lens cloudy. Should the pressure of the eye cause suffering, these should be cases for neurotomy in preference to enucleation.

Take another large class where the eye has been destroyed by choroido-iritis. We find still a comparatively good-looking eye which if it can be kept, is infinitely better than an artificial eye. If we can save to the individual such an eye by neurotomy, I contend that this is infinitely better than enucleation.

So far as atrophy is concerned, it has been my good fortune not to meet one such case, and I have seen many of these patients years after the operation. I have not been able to trace all of my neurotomies, so that I can not say that this result has not occurred. I am sure that those whom I have seen months or years after operation, with cornea still anæsthetic, a good looking eye with all its motions and discomfort, will not hesitate to say that neurotomy is a vast improvement on enucleation.

Acid Nitrate of Bismuth in Glycerine is a specific in microbic skin diseases.—*Curtman.*

MONOCULAR DIPLOPIA.

Read in the Section of Ophthalmology, at the Forty third Annual Meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY ROBERT TILLEY, M.D.,
OF CHICAGO, ILL.

In January 1888, I published a case of monocular diplopia. In order to avoid misapprehension, it may be well to state that the phase monocular diplopia is used to express the phenomenon, when there exists no visible anatomical peculiarity of the eyeball by which double images could be produced on the retina. Before narrating my own observation, I referred to similar cases published in the transactions of the Ophthalmological Society of the United Kingdom, giving particular attention to such cases as had been followed by an autopsy. At the last meeting of this society, Dr. J. H. Thompson, of Kansas City, brought the question before this Section, reported an interesting case and discovered the probable causes of the phenomenon. He referred to several other cases. Among others, one by Foutan reported to the Ophthalmological Congress, 1885, and accompanied by a very ingenious possible explanation of the phenomenon; and the case of Charlie Green, of St. Louis, reported separately by Dr. A. B. Shaw and Dr. Bremer, of St. Louis. This last case was especially interesting, inasmuch as it was followed by an autopsy but, very unfortunately, as far as I can understand was not well investigated from an ophthalmological standpoint:

When I reported my case in 1888, I supposed I should never see it again, but fortunately such was not the case. I will as briefly as possible recapitulate the history as then published and supplement its completion. A few years ago it was necessary to particularize accurately the details so as to show that there was no confusion between the phenomenon in question and an anatomically developed diplopia. Such minuteness is now scarcely necessary.

Mary R., 9 years, orphan, no family history obtainable; face expresses great distress, suppliant expression; step cautious as though afraid of jarring the head; eye (left) partially closed; movements of eye painful, no paralysis. severe pains in the head; slight conjunctivitis; cornea, aqueous; iris, lens, vitreous and fundus all normal; V. 6-18 with both eyes and each eye separately. N. V., S. O. 6; pupils contract normally both under the influence of light and accommodation. Persistently claims double vision in the left eye and denies it in the right. However the experiment was varied she never failed to sustain her claims and never contradicted herself. Under atropine the same answers were given to similar questions. Only now she claimed that for near vision one of the images was a good deal nearer to her than the other. For distant images this peculiarity did not appear or at any rate it was not demonstrated. She had no conception of any difference in color, between greens and greys; but a specimen of her work which I exhibit to you will give a better conception of her confusion of colors than any number of words (worsted work exhibited). This color blindness was in all probability of recent origin. These observations were made between November 12, 1887, and December 4, 1887.

December 4. She suffered from convulsions which came on in church and lasted for four hours. On the 8th, Dr. W. Brown, Professor of Nervous and Mental Diseases of Women's Medical College, was called in consultation. She had suffered from frequent delirium, excessive vomiting, buried her head in the pillow apparently from pain. She was, however, quiet enough at this time to demonstrate the diplopic phenomenon.

December 15. She improved rapidly without any manifest explanation, vomiting ceased, slept well, ate well. There was no mydriasis, no lack of accommodation, no paralysis. She still sees double with the left eye alone, the extra image is always in the nasal and upper half of field.

December 19. She left the institution in charge of the sisters and they reported that she seemed as well as ever but less active and less capable mentally.

January 19. As she did not return to the institution I visited her at her aunt's house. I found she was afflicted with abscesses in different parts of the body. The double images were still manifest to her left eye. My first report ended here. I did not expect to see her again but she returned to the sisters' charge and I had an opportunity of proving to myself that the diplopia had entirely disappeared and so had the color blindness. She sorted out the worsted skeins with a facility which left nothing to be desired. She remained with the sisters about twelve months and during that time although I was in constant attendance I never had occasions to see her except for my own gratification. About six months after her departure from the school the sisters reported to me that she was dead. There was no autopsy and I could get no reliable account of her last illness. The case presents these features of interest: Monocular diplopia confined to one eye, associated with severe cerebral disturbance and color blindness and recovery from both symptoms prior to death.

Since the observation of this case I have seen four others. All of them as clear and well defined relative to the diplopia as the one narrated:

Case 1.—Ilya H., 9 years, Swedish girl. There was a well defined monocular diplopia in both eyes, diminished visual acuity—6-18, deficiency of color sense. There was no manifest difficulty in the media or iridis and the fundus had a normal appearance. A month later she said her eyes annoyed her less and her vision was 6-9 nearly. Her mother did not bring her again. When I saw her later she reported that the child was quite well, did not complain of her eyes, but although she promised to let me see her she failed to do so.

Case 2.—F. M., 8 years, robust, strong, healthy looking girl was brought to my office by her father, a well to do and intelligent man. The child herself, without any solicition, complained that she saw double with each eye. The eyes presented a normal appearance in every respect and her vision was 6-6. I could find no evidence whatever, of cerebral trouble and I could give no satisfactory explanation of the phenomenon. Several of her teeth however, were badly decayed and I recommended their removal as a possible solution of the difficulty. I took no note of the color sense. A few days after the second visit, the last time I saw her, I received the following letter from the father: "March 3, 1890. Robert Tilley, M.D. Dear Sir: I am happy to say to you that my daughter's eyes seem to be now thoroughly well. The next day after I saw you, Mrs. M. took the child to the dentist and had the four bad teeth extracted. Since then she has had no trouble with her eyes. She used the prescription for a few days and seems to have entirely recovered." I did not quite believe this but supposed it was a polite way of saying that he had decided to change his oculist. As a preparation for this paper I went to the father's former office and learnt from his nephew that the child was the picture of health, and did not complain in any way about her eyes. That the father, after having for a year and a half, suffered from paralysis of the right side associated with, at the commencement, some difficulty in speech, died about the end of February of this year. I mention this fact as of some possible value in explanation of the cause of the phenomenon. He was about forty years old and paralysis of the right side with disturbance of speech in a man of that age has a probable significance.

(NOTE.—I have learned whilst here at Detroit, that the father contracted syphilis some fifteen years before I saw the child.)

Case 3.—Carrie H., a bright little girl of 8 years, complains of great discomfort in her eyes, disturbed with artificial light and of seeing two things with one eye. External appearance of the eyes normal, no sign of squint, or paralysis, or paresis, movement of eye good in every respect, V. 6-9, color vision normal, retinal vessels rather tortuous and fundus slightly mottled.

February 10, 1891. Says that yesterday while in school her vision left her for a while, says "it was the same as though her eyes were shut only it was light." When I saw her on the 19th, February, she claimed that the double vision had completely disappeared and her mother claimed that she was decidedly better in health. In a later report the mother informed me that the child did not complain any more of her eyes. This child is one of a family of two, her sister died of convulsions about a week after birth and she herself was cyanotic for some period after birth and is now afflicted with a general enlargement of the heart.

Case 4 was one of considerable interest, but one that I could not investigate to my satisfaction on account of peculiar circumstances. Hilda R., about 12 years, was the plaintiff for damages on account of alleged injuries in a railroad accident. She was completely hæmianæsthesic—left side—actual cautery pricking of pins elicited no response on the left side, bottle of officinal ammonia held to the left nostril provoked no expression of sensation, hearing appeared to be deficient, and sight a good deal below normal. The vision of both eyes was apparently deficient, and a deficiency of color sense. But what had not been observed was a well defined monocular diplopia in each eye. There was present during the examination the chief surgeon of the road as well as the family physician. I demonstrated the evidence of the monocular diplopia to surgeon, by a simple device. I put into the stereoscope, the card which I show you, the girl was of German parentage, and requested her to read everything she saw in the order in which it appeared. She read off every word twice. The fundus revealed a small amount of choroiditis, and the cervical glands were enlarged.

The nature of the accident was as follows: She was riding in a wagon, crossing a track, when a locomotive struck the wagon and projected the child a considerable distance. The left clavicle was broken and several small insignificant scalp wounds were made, but none of them in the posterior part of the head.

I reported that it was very improbable that the injuries were associated with the eye or ear symptoms, and in consequence of the choroiditis and enlarged cervical glands suggested to the lawyer to inquire into the family history of the child. The examination on the stand showed that the child's parents had had nine children, and only two were alive, the others having died in infancy; that the father's father had had eleven children, nine of whom died in infancy.

I have nothing more to add about this case. She was not my patient,I was only acting as an examiner and expert for the railroad. I have brought forward these items thinking they may contribute something to the elucidation of an obscure phenomenon. You will please observe that no claim was made on the part of the plaintiff of double vision, it did not seem to have occurred to any one interested in the prosecution, consequently that peculiar feature did not appear in the evidence. I should add, that during the trial she had an hysterical attack—screamed violently, and displayed well-marked athetosis of the fingers.

I will now try and show what of the various symptoms exhibited are common to all the cases. But before doing this I will remark that all cases that furnish a good ground for auto-suggestion should be thrown out as not belonging to the subject in hand; but on the other hand, auto-suggestion should not be entertained without a well defined reason. In our endeavors to avoid being deceived, especially relative to a statement for which we cannot assign a well formed theory, we are also in danger of deceiving ourselves. I will also call attention to what seems to be a mistake in the contribution of Dr. Thompson made to this Section last year. In referring to the case reported by Dr. Ord, said to be reported in St. Thomas Hospital Reports, 1879, it is stated relative to a boy of 13 years, "could find nothing abnormal in the eye or brain." I have not been able to consult St.Thomas Hospital Reports for that year, but Dr. Ord had a boy 13 years of age under his care in St. Thomas Hospital in 1879, and he is stated to have had an epileptic fit, but he himself states[1] that in dismissing the case he wrote as the nearest approach to a diagnosis cerebral tumor. Moreover, this same boy thirteen months later, Nov. 16, 1880, entered the "Leopold ward under Mr. McCormac, suffering from an abscess in the neck which was supposed to be connected with disease of some of the upper cervical vertebræ. He was then suffering from heart disease, and he died quite suddenly on the 20th of November, having giving no signs of cerebral affection, so that his death was supposed to be caused by sudden compression of the cord through giving way of the odontoid process." The result of the autopsy I gave in my communication of 1888. It was a large egg shaped blood clot 2½ inches long and one inch thick in the right hemisphere, encroaching on the lateral ventricle. I did not, however, add what is stated, that the hemisphere and the clot is preserved in the museum of St. Thomas' Hospital. I would like to call especial attention to the fact that notwithstanding this very gross lesion in the right hemisphere,the boy entered the surgical ward and no note was taken of any cerebral symptoms. So that it is not fair to suppose because gross cerebral symptoms are not observed, therefore, there are no lesions.

The chief symptoms,common to the three cases followed by an autopsy were convulsions,severe vomiting, great pain and double vision of one or both eyes. In some of those cases not terminating fatally there was present paresis or paralysis of some of the exterior muscles as well as the symptoms above indicated, in some milder cases there was practically little complained of except the diplopia together with some asthenopia.

In the three autopsies the chief lesion was found in the right cerebral hemisphere,whether the difficulty was chiefly referred to the right or the left eye. All of these lesions involved the posterior part of the hemisphere and one of them involved the cerebellum.

Whilst I do not think that it is proven that inherited syphilis has been an important factor in the most of these cases I regard it as very probable. You will remember that the case reported by Dr. Ord, although it left the hospital relieved of the severe symptoms which referred to the eye, reëntered with abscess in the neck associated with necrosed bone. In the case that I reported, abscesses appeared in various parts of the child's body. One child's father died a little while after I saw her from the effects of syphilis. The child that I examined for the railroad had choroiditis and enlarged cervical glands. Another child which I examined, Carrie H., a few days ago, although the diplopia had disappeared, had a well defined chain of enlarged cervical glands.

To explain the phenomenon I think the suggestion of Professor Foutan as practically satisfactory for the present,namely: That the impressions received by each eye are transmitted respectively to the right and left hemispheres and that in the normal condition ,these impressions are fused by communicating nerve fibres. When these communicating nerve fibres, however, are disturbed,double monocular vision should occur.

Asiatic Cholera.—Dr. R. W. Mitchell has had success with the following (Memphis *Med. Mo.*):

℞.	Acidi sulphurici dil,	ʒss.
	Morph. sulphat,	gr. ⅓.
	Spts. vini gallici,	ʒjss.
	Aquæ destillatæ,	℥iij.

M.—Sig. Inject under the skin of the arms, legs, and over the stomach every hour until symptoms of the disease are relieved.—*Medical Review.*

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[1] Transactions Oph. Soc. United Kingdom, 1882.

DOMESTIC CORRESPONDENCE.

History of Asiatic Cholera in New Orleans, La.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

The rapid progress of Asiatic cholera in Europe at this time, has justly alarmed the sanitary authorities of this great republic; but health authorities should not lose sight of the important fact that the *ordinary bowel affections at all times present with us inflict in the long run far greater mortality than Asiatic cholera.*

This proposition will be illustrated by the following

BRIEF HISTORY OF ASIATIC CHOLERA IN NEW ORLEANS.

It would be foreign to our purpose to enter fully into the history of this foreign pestilence which has at various times reached the shores of Louisiana from the shores of Europe across the waters of the Atlantic ocean and the Gulf of Mexico.

Asiatic cholera has played no insignificant part in the grand carnival of disease and death.

In 1832, Asiatic cholera in conjunction with yellow fever, swelled the mortality of New Orleans to 8,099 deaths, in a population of 55,084; and marked this year as the most terrible in the annals of this city, the death rate reaching the enormous proportion of 147.10 per 1,000 inhabitants.

In 1832, the inhabitants of New Orleans were more than decimated; more than one-seventh of their number were destroyed chiefly by Asiatic cholera, and yellow fever, as being in addition to the usual endemic and epidemic diseases.

The Charity Hospital affords the following statistics of Asiatic cholera:

1848,	cases, 662;	deaths, 396;	1849,	cases, 1,813;	deaths, 1,122;
1850,	" 724;	" 530;	1851,	" 382;	" 292;
1852,	" 485;	" 358;	1853,	" 194;	" 115;
1854,	" 478;	" 352;	1855,	" 351;	" 225;
1856,	" 32;	" 11;	1857,	" 1;	" 1;

Total, 1842–1860, (18 years).
Cases, 5,122; deaths, 3,402.
Percentage of deaths, 66.14.

During the 16 years following the civil war, New Orleans was comparatively exempt from Asiatic cholera, as shown by the statistics of the Charity Hospital Transactions:

1866,	cases, 300:	deaths, 237;	1867,	cases, 166;	deaths, 70;
1868,	" 15	" 9	1873,	" 34	" 27

Total cases and deaths, 16 years in the Charity Hospital (1864–1880) cases, 443; deaths, 343; per cent. of deaths, 77.4.

There were received into the Charity Hospital during 34 years (1846–1880) 5,565 cases of Asiatic cholera of which 3,745 terminated fatally, giving a rate of mortality of 67.3 per cent.

The first authentic records which we have of the appearance of Asiatic cholera in New Orleans, relate to the year 1832, when it occasioned 4,346 deaths out of a total of 8,099 deaths from all causes, yellow fever claiming only 400 deaths in this the most pestilential year in the annals of this city.

The disease claimed 1,000 victims out of a total of 34,976 deaths in 1833. In 1832, 78.78 per 1,000 of the inhabitants were destroyed by Asiatic cholera.

Cholera appeared again in 1848, and destroyed 1,646 inhabitants, and continued its ravages for some years, the deaths being:

Year.	No. Deaths.	Year.	No. Deaths.
1849	3,176	1858	28
1850	1,148	1859	27
1851	430	1860	30
1852	1,329	1861	17
1853	585	1863	4
1855	883	1864	5
1856	46	1865	9
1857	24		

Total deaths from Asiatic cholera in New Orleans, during a period of 19 years (1844–1865) 9,678.

Cholera appeared again in 1866, and continued its ravages for three years. The deaths were as follows:

Year.	No. Deaths.	Year.	No. Deaths.
1866	1,294	1871	6
1867	581	1873	142
1868	129	1874	6
1869	4	1875	4
1870	3		

Total deaths during 15 years (1866–1880) 2,169.

It is evident from the preceding statistics, that during a period of 34 years (1846–1880) Asiatic cholera destroyed 11,847 of the citizens of New Orleans, and if we add to this the number of deaths occasioned by the disease in 1832 and 1833, we have a grand total of 17,187 deaths.

It is probable that the mortality occasioned by Asiatic cholera was far more in excess of these figures, for we find upon careful examination of the mortuary records of New Orleans, that during a period of 34 years (that is 1846 to 1880) the deaths from bowel affections were as follows:

Cholera morbus	889
Cholera infantum	2,408
Teething	3,430
Gastritis	743
Enteritis	6,916
Dysentery	7,097
Diarrhœa	8,289
Total	29,772

During the same period of 34 years, yellow fever occasioned 28,739 deaths.

It is evident, therefore, that the so-called ordinary bowel affections, diarrhœa, dysentery, cholera morbus, enteritis, gastritis, and teething (cholera infantum), actually caused a larger number of deaths in New Orleans than yellow fever. And if we add the 11,847 deaths caused by Asiatic cholera, we have a grand total of 41,618 deaths from these diseases in which derangements of the gastric intestinal mucous membrane forms the most prominent symptoms. The continuous and fearful mortality of this class of diseases must be diminished by improved and domestic sanitation.

The great essentials of sanitary reform for the diminution of the ravages and fatality of the cases of bowel affections in New Orleans must be based upon:

1. Thorough drainage of the entire parish of Orleans, and especially that portion occupied by the city of New Orleans.
2. The prompt removal of all fecal matter out of the limits of the city.
3. The daily removal of garbage.
4. Systematic and thorough cleansing and disinfection of private premises, public buildings, factories, markets, streets and gutters.
5. The filling up with sand and gravel of all low lots.
6. Free supply of pure filtered river water to all classes at the lowest possible cost.
7. The honest and efficient inspection of markets, milk, meat, fish, fruit and food supplies.

Respectfully,

JOSEPH JONES, M.D., LL.D.

156 Washington ave., New Orleans, La., August 30, 1892.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.—By order of the Council, the annual meeting of the Association has been postponed from the 8th, 9th and 10th, until the 15th, 16th and 17th of November. It was thought wise to change the time of meeting from the fact that the 8th of November is the date of the Presidential election.

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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, SEPTEMBER 10, 1892.

THE CHOLERA PSYCHOLOGICALLY.

The arrival of cholera opens up a new phase of preventive medicine that so far has not attracted much attention. The old proverb that fear kills more persons than disease, is likely to be fearfully illustrated in this country. Already the press has begun with the most minute and exhaustive descriptions of this disease, and its varied symptoms. The natural dread and panic which exists following every sudden mysterious epidemic is intensified to an alarming degree. Each reader is unfitted both physically and psychically to resist the germ poisons. The vital centers are depressed and he is placed in the most favorable condition to be attacked, and to succumb at once. The cleaning up of streets and sewers, and placing the towns and cities in the best hygienic conditions is only a part of the real preventive remedies. The army of neurotics, and the nerve and brain exhausted men and women of every town and city, need protection from this mental source of danger. The more minutely and graphically cholera is described, the greater the number of victims from these classes. A psychical contagion will break up the conservative power of the nerve centers, and precipitate profound depressions that will take on all the characteristic symptoms, even to death. Every where the profession should protest against this indiscriminate publication of details of this epidemic. People should be advised not to read long accounts of the progress of this disease. Boards of health, and sanitary authorities, should point out the danger from this source, and urge the press to conform to the teachings of science, and aid in the efforts to limit this scourge. If medical men would keep a record of panic struck mental cases, which are sure to occur in every town, very interesting data would be gathered. While these facts are not new, and are more or less familiar to every medical man, they are overlooked in the excitement of the time and occasion. They are of much greater interest in this country than elsewhere, because of the freedom of the press, the greater skill and facilities of writing up these events, and the larger number of daily readers who depend on the papers for their usual excitement. If the New York, or other large dailies, should describe these cholera cases, as dying with wild shaking delirium, a large proportion would have these identical symptoms. This takes place in other cases and has been pointed out many times before.

To avoid a panic in times of excitement is practically to suppress all details in the daily press, especially in matters of disease. The profession ought to join everywhere in teaching the press the danger of publishing details of epidemics. Already two cases are reported of deaths with all the symptoms of chlorina where the victims read minutely all the press accounts of cholera. While cholera may not be very serious or wide spread in this country, it is evident that its control is largely in the hands of the profession, and that prevention is the highest achievement of science. The public will of course demand the latest news of its progress, but only the morbid neurotics will call for the details, and the symptoms of its appearance; but the press owes a duty to the public to suppress these, as a sanitary measure While it is not likely this will be done at present, we urge our readers to observe and gather up all records of cases, that can be traced to this source. Preventive medicine will demand in the near future the removal or correction, of all psychical as well as physical causes. Science will teach that epidemics have other than germ poisons to perpetuate and extend their destructive power.

The press advice to keep cool and avoid panic, must be coupled with the most general facts of the progress of the evil. Otherwise they furnish the very material and germ forces for the most aggravated panic, because it is applied to each one personally, and vast numbers of persons can not avoid the inevitable contagion of applying to themselves, the conditions described. The cholera will be fatal in many cases, but mental contagion growing out of the unstrained publication of all symptoms, will have far more victims.

The germ soil is here, and all the conditions are favorable, let the reporter write up in the usual sensational way the coming disease, and it may be here at once in all its virulence.

THE MEDICAL ASPECTS OF CRIME PREVENTION.

A governmental report on the Fourth International Prison Congress held at St. Petersburg has appeared under the editorship of HON. C. D. RANDALL of Michigan. We desire to commend the document to all medical men who indulge a taste for the study of correctional reform. An address contained in this volume, by SENATOR CANONICO, of Rome, may be quoted briefly since it places a most remarkable value on the influence that may be exerted by physicians for the reformation of vicious persons. He says: "The physician is, above all, the director of the prison, and he ought to be. Entering with a loving and devoted spirit the place of each convict, seeking to possess his confidence, laboring with each according to his disposition; better than any one else he can contribute to the awakening of the conscience. The pivot of prison reform is a good personal direction. But the most essential and difficult matter will be to make the diseased person—that is to say, the prisoner—consent to take the remedy. If he will not take it when properly prescribed the fault will not be in the remedy, nor in the physician, but in the patient himself. We build prisons, but what is more difficult is to introduce into them the spirit of penitence." It is without doubt true that of all the persons who come into contact with prisoners the physician is the one who can with the least difficulty win their attention, but to how many of our jail physicians has the thought occurred that they have before them the same line of possible benefactions that gave to JOHN HOWARD an undying name?

HEAD TETANUS OF ROSE.

The infrequency with which certain diseases are observed in the human subject is occasionally a consideration worthy of discussion. At first it would appear as though there must necessarily be some peculiarity in the individual or upon the part of the etiological factor not present in other cases. Those diseases which are clearly of bacterial origin are of greatest interest in this particular direction. A biological study of bacteria, including their manner of propagation, their range of conditions for development, and their parasitic propensities may possibly give a key to the situation. Such facultative parasites as the tetanus bacillus or that of malignant œdema may never produce disease until accidentally transferred to some host where they are capable of growing and producing characteristic changes. These examples of accidental infection are often of so rare occurrence that an instance is not seen among thousands of cases of disease. Their rarity and the interesting facts that may be adduced from them, require that each instance should have a complete history and an exhaustive clinical examination. What geologist would allow a rare form of fossil bivalve to go unpublished, or would an embryologist permit an unusual case of fission to be forgotten? Such neglect could never occur to the true scientist. Yet it is true that in general practice, the value to be derived from such cases is lost owing to inadvertence or failure in a timely consideration. The neglect to publish or to notice previous cases, is also a fault of frequent occurrence. As an example, NICHOLAIR (*Virch. Arch.*, Band 128, Heft I, 1892) deplores the fact that a case of so-called ROSE's head tetanus which was observed and investigated by him remained without notice by contemporaries. As only some forty-two or three cases in all have thus far been recognized, it may be appropriate to recall the subject at this point.

In 1870 ROSE reported a peculiar clinical form of tetanus that occurred after injuries to the face and neck. *It was characterized by facial paralysis* upon the side of the injury and subsequent tonic contractures of the musculature of the neck and larynx. BRUNNER inoculated guinea-pigs with the tetanus cultures upon one side of the head and observed contractures throughout the distribution of the facial nerve, and later trismus and general contractures. It would appear, because of the failure to produce facial paralysis experimentally in animals, that there were other factors, beyond the tetanus infection present in man. In France several cases of head tetanus were examined bacteriologically, and although many microörganisms were demonstrated, yet the *tetanus bacillus was not isolated.* ROUX and SPANJE reported their investigations negatively. The reason probably being in a failure of their methods. FLUGGE and REMBOLD produced tetanus by introducing a *splinter from a case of head tetanus into mice,* but did not demonstrate tetanus bacilli. The case of NICHOLAIR was presented by himself and BRENNICKE in 1890. Here also inoculation experiments were negative for the brain, cord or cranial nerves, but when mice were inoculated with material taken from the neighborhood of the wound they died from tetanus in twenty-four hours. From these, pure cultures were obtained. This demonstration places bacillus without doubt as the etiology of head tetanus. The pathological significance of the facial paralysis has given rise to considerable dispute. BERNHARDT and others have accepted the possibility of a toxalbumen. And this can be none other than a ptomain produced by the tetanus bacillus. Just why the facial nerve should suffer has been explained by ROCKLIFFE and ROBERTS as due to a greater susceptibility of this nerve, while BRUNNER thinks that its more superficial position may be taken as a satisfactory cause.

Contributions to recent medical science are obtained only through persistent and painstaking effort. The gross principles have been promulgated, but it still remains to investigate and specify the details. Such experimentation can only come from the best equipped hospitals and laboratories. That America is not on a level with modern experimental science may be traced directly to this absence of equipment. Just at this time the laboratory element in medical education is manifesting itself in this country and from it and its patient workers alone can we expect to assume the foremost position in medicine.

EDITORIAL NOTES.

The Insanity of Egotism.—An article has appeared in the *North American Review*, entitled "A Modern Form of Insanity," by Dr. H. S. Williams, which throws some interesting lights upon those indifferently understood persons "the cranks." Dr. Williams holds that the great majority of these unfortunates are diseased mentally. The disease has been termed "paranoia," and more than any other insanity is the result of an inherited mental instability. The progenitors may not have been insane, but they may have been nervously unstable from drunkenness or from some wasting disease. The offspring may be merely nervous; he may have epilepsy or chorea; he may be insane. At the best, he may usually, if properly educated, learn to understand himself and to live a sane and useful life. We have here to do, however, only with the cases in which a wrong environing influence aids in the development of a particular form of insanity. It is possible to outline pretty definitely the mental attributes. One may even point out in the child what might be termed the paranoiac temperament. Its characteristics are morbid sensitiveness and great egotism. Unfortunately, the parents of such a child usually take pride in the egoism that leads to eccentric acts, while the extreme precocity of many of these subjects causes their egotism to be fostered by ill-adjudged praise. Usually the child of paranoiac temperament is the genius of his family and the show pupil at school. Pampered and praised, even though the entire household becomes subordinated to his sovereign will, he is not satisfied, believing that he does not receive his dues. With that idea, the germs of paranoia are planted in his mind. Whether or not these germs will develop into the pathological condition that we are discussing, will depend largely upon the influences that are brought to bear upon them during adolescence and early manhood. Perhaps the most unfavorable environment is one in which the mind is developed at the expense of the body. And of course, the brilliant child is the one whose mental training will be forced. The other children of the family may stay at home, but this one must be sent to college and fitted for one of the learned professions. Usually he seems to justify this discrimination. Often he is an "honor" man at college, and he starts out into the world with every seeming prospect of an eminently prosperous career. But all this time he has become more and more eccentric. He has associated little with his fellows. Often he has shown himself possessed of extraordinary energy and capacity for application. A peculiarity often noted is a tendency to make elaborate written records of trivial subjects. Occasionally the young person of paranoiac temperament breaks down under the unbalancing influences of overstudy while still at school. But usually the critical stress comes after he has gone out into the world. He is usually not yet insane. He may never become so. If his business or professional ventures succeed, he may become distinguished, and contact with the world may gradually correct the morbid tendencies. But if adverse circumstances arise and refuse to be put down, especially if the individual's vanity is wounded by failure to rise to the heights pictured by ambition, morbid brooding may develop out of vanity, selfishness and suspicion, the delusion of persecution. But it must not be supposed that the mature condition is merely egotism and egoism run riot. That it has come to be something more than this is proved by the appearance, sooner or later, of hallucinations of one or more of the senses. These do not necessarily coincide at first with delusions. The incipient paranoiac may hear voices about him and for a time be able to convince himself of their unreality. But, sooner or later, these sounds become so tangible that they have the full force and import of actual voices. At first he hears them only when people are actually speaking, his mind merely misinterpreting what it hears. This perversion is technically termed an illusion. But at last he hears words and sentences when no real sound comes to his ears; these are true hallucinations. Perversions of other senses usually precede or follow this one. Illusions of touch and smell are common. The former lead to a belief in invisible spirits that touch the body; and the latter convince the patient that attempts are being made to poison him with noxious gases. When to this cluster of perverted sensations hallucinations of sight are added, the galaxy is complete, and the victim moves and has his being in an ideal world peopled with odors, tastes, sounds and sights that are shut out from the common herd. The patient lives a dual existence. For a time he is able to treat the actual world in the old familiar way—that is, sanely; meanwhile keeping the new and strange world hidden. But gradually he comes to confound the two existences. He comes to believe that hosts of people are leagued against him, and all sane interests give way to a desire to thwart those imagined foes. At this stage of his morbid career the patient becomes very dangerous, though he may still seem to be the most peaceable of men. Murders are often committed by patients in this condition. But many more intended murders that are carefully planned are never executed because of the irresolution of the would-be murderer.

Inguinal Bubo Resulting in Death by Hæmorrhage.—The *Boston Medical and Surgical Journal*, July 28, contains a report, by Dr. John Homans, of a case of bubo terminating in fatal hæmorrhage. It is rare that a sloughing inguinal abscess progresses to the extent of destroying the life of the patient in this manner, but neglect of treatment may as in this case readily lead up to such a fatality. Dr. Homan's patient, a male, observed in November, 1891, an inguinal swelling, which he declined to have opened. On December 8, the abscess "pointed and broke" the slough separating six weeks later. There was an oozing of blood March 18, which became a hæmorrhage on the 21st. The patient had continued at his occupation until this latter date, when he was admitted to the hospital. The femoral artery was deligated, on both sides of the slough, in its wall. Transfusion and stimulation were employed without avail, the patient succumbing after two days.

Coffin-Birth.—Under this term, Bleisch has reported, in the *Viertschrift fur gericht Medicin*, a case of probable post-mortem fœtal expulsion. A woman, attended by two midwives, was taken with labor pains at the end of a normal pregnancy, and after two hours of fruitless labor died. A medical examination, two hours after the death of the patient, disclosed the non-delivery of the fœtus. About three hours later the body was put in a coffin. After an interval of three days the coffin was opened and the body examined. The uterus was found inverted and extruded. A dead child, still attached to the placenta, lay between the thighs of the dead mother. It had probably been expelled subsequent to the mother's preparation for burial. By some, the expulsion post-mortem is held to be due to uterine contractions during the *rigor mortis*, the fœtus having been already advanced toward delivery by preceding vital effort. By others the post-mortem birth is explained as a result of the formation of the gases of decomposition. Possibly the interaction of these two agencies may be necessary to the production of "coffin birth."

An Army Medical Board will be in session in New York City, N. Y., during October, 1892, for the examination of candidates for appointment to the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before October 1, 1892, for the necessary invitation, stating the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from whence they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal knowledge, from at least two physicians of repute, as to professional standing, character, and moral habits. The candidate must be between 21 and 28 years of age, and a graduate from a regular Medical College, as evidence of which, his diploma must be submitted to the Board. Further information regarding the examinations may be obtained by addressing the Surgeon General U. S. Army, Washington, D.C.

C. Sutherland, *Surgeon General U.S. Army.*

SELECTIONS.

The Mechanism of Concussion of the Brain.—In *Brain*, part i of volume viii, there is a paper by Dr. Alexander Miles supporting and confirming the conclusion published by Duret, that the group of phenomena commonly spoken of as "concussion of the brain" is the result of a temporary anæmia of that organ. This anæmia is the reflex result of stimulation of the restiform bodies, and perhaps of other important centers in the region of the bulb, produced by the wave of cerebro-spinal fluid which rushes through the aqueduct of Sylvius and the foramen of Magendie from the subarachnoid space of the brain to that of the spinal cord when a severe blow is dealt over the skull. In accordance with the laws of hydrostatics this cerebro-spinal wave will disturb the equilibrium of the ultimate nerve cells throughout the central nervous system. The hæmorrhages found throughout the brain substance and on its surface are to be ascribed to the recession of the cerebro-spinal fluid, which naturally supports the blood-vessels of the cerebrum. These petechial hæmorrhages are not the proximate cause of the symptoms of concussion, but are rather to be looked upon as an index of the force that produced the injury.

A Bacteriological Study of Drinking-water.—Dr. Victor C. Vaughan has published (*Am. Jour. of the Med. Sci.*, August, 1892) the results of his work in the bacteriological study of drinking-water since 1888. He describes the methods by which he obtains his samples, makes cultivations and inoculates animals. He concludes that many of the germs found in drinking-water will not grow at the temperature of the human body, and are therefore incapable of producing disease. Of the germs which grow at 38° C., or at higher temperatures, some are fatal to animals (toxicogenic) when injected subcutaneously, while others are not (non-toxicogenic). The non-toxicogenic germs do not multiply when injected under the skin or into the abdomen of animals; but this is not sufficient evidence that they would not multiply in the human body, so water containing them has been regarded as suspicious. Some of the toxicogenic germs produce the same symptoms and post-mortem appearances in animals as Eberth's bacillus; the properties of the former are fully equal to those of the latter, and they not only live but multiply in the animal body; water containing them was always condemned. It was found that more than one germ obtained from drinking-water grew with an invisible growth on potatoes, and that several grew on the media proposed by Parietti, Uffelman and others, as a means of recognition of Eberth's bacillus.

Syphilis in Nineveh and Babylon.—In *Le Progrés médical* for July 16, there is a *résumé* of a brochure by F. Buret on an interesting legend that a scribe of Sardanapalus had engraved in cuneiform characters on a brick that is now in the British museum. Istar, the goddess of illicit love, fertility, and war, the mother of the gods and of men, seduced by the lustiness of Nimrod, had solicited that hero to take her as his wife. He ungallantly refused and continued to hunt in the woods with his comrade, Eabani, a male himself, for he also could uninterruptedly employ six days and seven nights in amusing himself with the *la lú* of his sweetheart. Outraged and indignant, Istar demanded that her father, Anu, should send the sacred bull against this rebel. But Eabani had no fear of ferocious beasts, and, seizing the bull's penis, threw it at the goddess's face. Istar's fury made all the planetary system tremble, and after twelve days of struggling, Eabani was struck by death. Nimrod was afflicted with a loathsome leprosy that made his hair fall out, and his body was covered with scaly patches, and there were pustules on the phallus that was adored at Babylon. He descended into hell and was purified by the fountain of life. The author has given in a former work what he considers proof of the existence of syphilis among the ancients; and he finds in this legend of the punishment of Nimrod confirmation of all that he has written on the subject.

The Action of Phenocol Hydrochlorate.—Dr. Rudolph Bum obtained the following results from the use of this drug in wafers in the dose of 0.5–0.7–1.10 gram, and in the daily amount of 5.0 grams. Even in small doses it is a powerful, almost sure antipyretic in phthisis. In case of great weakness and in the last stages of the disease the drug should not be used. It has a slighter and much less constant action in erysipelas even when given in large doses. It has only a slight antipyretic action in rheumatism, and does not affect the disease. In migraine it acts well in doses of 0.5 gram, but has no effect in myelitis or sciatica. Unpleasant effects on the digestive tract occurred in only a few cases.—*Boston Med. and Surg. Journal.*

The Digestibility of Various Kinds of Cheese has been recently tested by a German chemist, who placed the samples in fresh gastric juice. Cheshire and Roquefort cheese took four hours to digest; Gorgonzola and Neufchatel, eight hours; and Brie and Swiss cheese, ten hours.—*Med. Record.*

NECROLOGY.

The Late Dr. Catlin.

At a meeting of the medical fraternity of Rockford, Aug. 30, 1892, the following resolutions were unanimously adopted to express the feelings of the profession concerning the death of Dr. A. M. Catlin:

Whereas, Our honored and venerable associate and friend Dr. A. M. Catlin, has entered upon a wider opportunity beyond, after having advanced to the age of 91 years, and practiced more than half a century in this community, and consequently had witnessed and taken part in the wonderful development of medical and other sciences for nearly a century; and who by his upright and consistent christian character, by his faithful and ever constant devotion to his profession, by his courteous relation to his professional brothers, to his friends and the community at large, has inspired us who remain behind to express our deep appreciation of the life that is spent; therefore

Resolved, That in the death of our brother the profession of this city has lost an esteemed and cherished member, a man of multiple virtues and no vices, and the community a man of ripe years and wisdom, who, having lived in this city from its infancy, did much to make its institutions and industries what they are.

That to his family we tender our sincere sympathy in the withdrawal from their midst of the reverent, kindly, charitable spirit that has blessed them for so many years, and express our earnest belief that these associations, beautiful here, will be renewed and perfected hereafter; and

That a copy of these resolutions be conveyed to his family and furnished for publication in THE JOURNAL of the American Medical Association.

DR. THOMAS FANNING WOOD, editor of the *North Carolina Medical Journal*, died at Wilmington, on the 22nd ult., from cardiac disease. He was born in 1841, at Nantucket, Mass. He pursued his medical studies at the Virginia Medical College and the Maryland University, taking an honorary degree from the latter institution in 1868. He settled in Wilmington and joining the New Hanover county association became its president in 1875. He was the Secretary of the State Medical Society for many years beginning in 1867. From 1863 to 1865 he was an assistant surgeon in the Confederate service, and in 1866 in charge of the small pox pavilion of Wilmington. He was a member of the State Board of Medical Examiners and Secretary of the State Board of Health. Under his direction was published the interesting little monthly Bulletin of sanitary reports, from the various local boards and committees, throughout the State. He was one of the early members of the American Public Health Association. He was a member of the American Medical Association at various times since 1878. He was connected with the *North Carolina Medical Journal* from its inception in 1878, and for a number of years was its sole editor. He had been a sufferer from aneurysm and believed himself to have been greatly benefited by rest-treatment, during a period of two years or more, and was enabled to resume a share of his public and professional duties, yet his final illness, as reported by the news-telegrams, namely cardiac disease, may have been a legacy of his former disability. Although cut down in the prime of his mental vigor he has left a record of thirty very diligent and useful years in literary and sanitary fields of labor.

DR. WILLIAM H. HENDERSON, professor of clinical medicine in the Royal College of Physicians and Surgeons, Kingston, Canada, died on the 14th ultimo, in the 37th year of his age. The final illness was due to pulmonary œdema following Bright's disease. He was a member of the college of Physicians and Surgeons, Ontario, since 1880, and a member of numerous societies.

BOOK REVIEWS.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION. Vol. 8. Philadelphia: W. B. Saunders, 1892. 8vo. pp. 276. Price $1.50 net.

The contents of this volume are of much wider scope than the title indicates.

The subject of influenza occupies much space, and excellent reports are given of the epidemic as it appeared in different cities, including Philadelphia by Curtin and Watson, Chicago by Fletcher Ingals, St. Louis by J. C. Mulhall and Savannah by R. J. Nunn. The discussion upon these reports was indulged in very generally by the members of the Society and took a wide range.

Pulmonary Tuberculosis is given much consideration, and papers relating to some phase or other of this important subject were read by Drs. E. L. Shurley, Edward O. Otis, Alfred L. Loomis, S. A. Fisk, H. F. Williams, T. Hilgard Tyndale, Frank Fremont-Smith, Wm. C. Glasgow and H. B. Moore.

Lymphatism is considered in a short but interesting paper by F. H. Bosworth. Dr. J. H. Musser has a suggestive paper on whooping cough. Among the other papers should be mentioned: "Notes on General *versus* Local Treatment of Catarrhal Inflammations of the Upper Air-tract," by Beverly Robinson, "Medical Treatment of Pleurisy" by G. M. Garland, "The Climate of the Greater Piedmont and Mountainous Regions of the Southern United States" by W. C. Van Bibber, "Nervo-vascular Disturbances in Unacclimated Persons in Colorado," by J. T. Eskridge, "The Surgical Treatment of Acute and Chronic Empyema" by Maurice H. Richardson and "An Experience with Diphtheria at a High Altitude" by Walter A. Jayne. The discussions are very interesting and add much to the value of the book.

THE PATHOLOGY AND PREVENTION OF INFLUENZA, by JULIUS ALTHAUS, M.D. New York: G. P. Putnam's Sons. 1892.

This little monograph of sixty-four pages is an amplification of a paper read before the Medical Society of London, and published in the *Lancet* for November 14, and 21, 1892. The author's purpose is to show "that the symptoms of influenza are owing to the action in the system of a special poison secreted by a pathogenous bacillus; that this poison has a special affinity to a definite centre of the nervous system, which is irritated and depressed by it, that an antidote which is able to neutralize the effects of the poison is formed in the blood of the patient, and tends to effect a spontaneous cure of the disease; and that the nearest approach to this antidote which we at present possess appears to be animal vaccine lymph."

PRESCRIBING AND TREATMENT IN THE DISEASES OF INFANTS AND CHILDREN. By PHILIP E. MUSKETT, late Surgeon to the Sydney Hospital, etc. Philadelphia: P. Blakiston, Son & Co. 1891.

This little book is divided into three parts, the first of which relates to dosage and therapeutics, the second to the treatment of diseases, and the third to recipes. The first part is of considerable service in suggesting the dosage of various remedies in various conditions. The second part arranged alphabetically under the names of diseases, is quite routine and not very inspiring. The subject matter is decidedly too old for a modern book on pediatrics.

ATLAS OF CLINICAL MEDICINE. By BYRON BRAMWELL, M.D., Assistant Physician to the Edinburgh Royal Infirmary, etc.

Volume i, Part 4, of this excellent work has just been issued by the University Press, Messrs. T. and A. Constable. The contents of the number are: Small-Pox; the Clinical Investigation of Cases of Small-Pox; A Remarkable Case of Globulinuria; Dr. Noël Paton's Observations on Globulinuria; Three Cases of Friedreich's Ataxia; Case of Chronic Insanity; Case of Hilarious Mania. The plates are: four of small-pox, two of melancholia, one of melancholia with strong suicidal tendency, two of mania. The high character of the work has been well maintained.

LECTURES ON PATHOLOGY DELIVERED AT THE LONDON HOSPITAL. By the late HENRY GAWEN SUTTON, M.B., F.R.C.P. Edited by MAURICE EDEN PAUL, M.D., and revised by SAMUEL WILKS, M.D., LL.D., F.R.S. Philadelphia: P. Blakiston, Son & Co. 1891.

Every page shows the author's individuality, and magnificent common sense. While nominally a work on pathology, the author devotes much time to etiology, symptomatology, and treatment. In style the didactic form prevails, and makes the book exceeding readable. The ground covered is extensive. no less than 53 separate lectures being included, but it is in no sense a systematic treatise. It is never common place and should be read by all thinking physicians.

MISCELLANY.

The Medical Society of the Missouri Valley.—The annual meeting will be held at Council Bluffs, Iowa, September 15, 1892.

9:00 a.m. Registration and payment of dues. Organization. Report: Committee on credentials. Reading minutes. Miscellaneous business. Report: Committee of arrangements.

Papers: 1. Pelvic inflammations following parturition, Dr. J. G. Biller, Cherokee, Iowa. 2. Was it Auto Suggestion? Dr. S. Grover Burnett, Kansas, City, Mo. 3. The Region of the Macula Lutea in Ophthalmoscopy, Dr. M. F. Weymann, St. Joe, Mo. 4. Deformities of the Lower Limbs, Dr. J. W. Cokenower, Des Moines, Iowa. 5. Fibroid of the Uterus, report of Case, Dr. Frederic Bacon, Omaha, Neb. 6. Thrombolic Abscess, report of two Cases, Dr. Ira E. Atkinson, Fremont, Neb. 7. Malthusianism, Dr. J. M. Richmond, St. Joseph, Mo. 8. Trendelenburg's Position in Pelvic Surgery, Dr. J. E. Summers, Jr., Omaha, Neb. 9. Empyema, Dr. Donald Macrae, Council Bluffs, Iowa. 10. A Study of Seven Fatal Laparotomies, Dr. Emory Lanphear, Kansas City, Mo. 11. Cystitis in the Female, Dr. B. F. Crummer, Omaha, Neb. 12. Appendicitis, Medical and Surgical Management, Dr. A. F. Jonas, Omaha, Neb. 13. Retained Placenta, Dr. H. B. Lowry, Lincoln, Neb. 14. Warm Antiseptic Baths in Inflammations, Dr. Wm. Jepson, Sioux City. Iowa. 15. Chloroform Narcosis, Dr. H. Gifford, Omaha, Neb.

The Tri-State Medical Society of Alabama, Georgia and Tennessee.—List of papers for the fourth annual meeting, which will be held in Chattanooga, October 25, 26 and 27, 1892:

"Eye Symptoms in General Disease," J. L. Minor, Memphis, Tenn.

"Talipes Equino-Varus" (with presentation of patients), C. W. Barrier, Rome, Ga.

"Sequences of Otitis Media Purulenta," T. Hilliard Wood, Nashville, Tenn.

"Report of 1,050 Strabismus (Cross Eye) Operations, with some Observations on the Same," A. W. Calhoun, Atlanta, Ga.

"Special *vs.* General Practice in Medicine," W. J. Killen, Birmingham, Ala.

"Synovitis," J. B. Cowan, Tullahoma, Tenn.

"The Present Status of Medical Education in the South," Luther B. Granby, Atlanta, Ga.

"Pharmaceutical Preparations of the Present Day," Jno. C. Le Grand, Anniston, Ala.

"A Clinical Study of the Relation between Scarlet Fever and Diphtheria," W. D. Hoyt, Rome, Ga.

"The Treatment of Inguinal Hernia," J. W. Handly, Nashville, Tenn.

"Fistula in Ano," Andrew Boyd, Scottsboro, Ala.

"Stricture of the Male Urethra; its Diagnosis and Treatment," W. L. Gahagan, Chattanooga.

"Phymosis," Erasmus T. Camp, Gadsden, Ala.

"The Rational Treatment of Enlarged Prostate in Old Persons," Geo. W. Broome, St. Louis, Mo.

"Advanced Theories in Psychical Science," Jno. E. Purdon, Cullman, Ala.

"Drunkenness and Its Gold Cure?" John P. Stewart, Attala, Ala.

"Surgery—Things to Do and Things not to Do," Willis F. Westmoreland, Atlanta, Ga.

"A Few Selected Cases in Laparotomy," W. H. Wathen, Louisville, Ky.

"Extra-Uterine Pregnancy," Richard Douglass, Nashville, Tenn.

"The After Treatment of Abdominal Operations," W. E. B. Davis, Birmingham, Ala.

"Hepatic Abscess," E. B. Ward, Selma, Ala.

"Report of Treatment of Sterility," J. M. Head, Zebulon, Ga.

Titles not announced: Jno. L. Howell, Knoxville, Tenn.; J. M. Masters, Knoxville, Tenn.; C. S. Briggs, Nashville, Tenn.; I. N. Love, St. Louis, Mo.

The Committee have secured a one and one-third rate from the railroads on the certificate plan. The meeting promises to be one of unusual interest.

The American Electro-Therapeutic Association.—A very full program is announced for the coming meeting of the American Electro-Therapeutic Association which is to be held in New York, at the Academy of Medicine, 17 West 43d street, October 4, 5 and 6. There will be two interesting discussions one upon "The Relative Fœticidal value of the different Currents and their Application to Ectopic Gestation," to be discussed by many prominent Gynecologists and Electricians, and another upon "Cataphoresis and its Practical Application as a Therapeutic Measure."

Papers are announced by Drs. Geo. J. Engleman, Wellington Adams, and Geo. F. Hulbert of St. Louis, Wm. F. Hutchinson, of Providence, R. I., Franklin H. Martin, of Chicago, Ill., A Lapthorn Smith of Montreal, Canada, R. J. Nunn of Savannah Ga. Thomas W. Poole, of Lindsay, Ontario, C. Eugene Riggs, of St. Paul, W. J. Herdman, of Ann Arbor, Mich., D. S. Campbell, of Detroit, Mich., G. Betton Massey, of Philadelphia, Henry D. Fry, of Washington, D. C., H. E. Hayd, of Buffalo, N. Y., J. H. Kellogg, of Battle Creek, Mich., C. G. Cannaday, of Roanoke, Va., Ernest Wende, of Buffalo, N. Y., and Wm. J. Morton, Augustin H. Goelet, A. D. Rockwell, Landon Carter Gray, Robert Newman, Ephraim Cutter, Frederick Peterson, G. M. Hammond, F. Van Raitz, of N. Y., and many others. Dr. J. Mount Bleyer, will give an instructive lecture with demonstrations entitled, "The Phonograph and Microphonograph, the Principles underlying them and their Uses in the Sciences."

In connection with the meeting, there will be an exhibition of modern medical electrical apparatus, all the prominent manufacturers being represented.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from August 20, 1892, to August 26, 1892.

Capt. Louis M. Maus, Asst. Surgeon U. S. A., so much of Par. 9, S. O. 194, A. G. O., August 18, 1892, as relates to change of station, is suspended until further orders. By direction of the Acting Secretary of War.

Major Paul R. Brown, Surgeon U. S. A. (Ft. Supply, I. T.), is granted leave of absence for one month, to take effect on or about September 1, 1892.

Major Joseph K. Corson, Surgeon U. S. A., leave of absence granted is extended one month.

Lieut.-Col. Charles R. Greenleaf, Deputy Surgeon-General, now at Montpelier, Vt., will proceed to Plattsburg Bks., N. Y., on business connected with the Medical Department, and on completion thereof will return to Montpelier.

First Lieut. Paul Shillock, Asst. Surgeon U. S. A., now on temporary duty at San Carlos, Ariz. Ter., is relieved from duty at Ft. Grant, A. T., and assigned to permanent duty at San Carlos, A. T., relieving First Lieut. Nathan S. Jarvis, Asst. Surgeon. Lieut. Jarvis, on being relieved by Lieut. Shillock, is ordered to Ft. Apache, A. T., for duty, relieving Capt. Louis M. Maus, Asst. Surgeon. Capt. Maus, on being relieved by Lieut. Jarvis, is ordered to Whipple Bks., Ariz. Ter., for duty.

Capt. Richard W. Johnson, Asst. Surgeon U. S. A., is relieved from duty at Ft. Bayard. N. M., and ordered to Ft. Bowie, A. T., for duty at that station, relieving First Lieut. Philip G. Wales, Asst. Surgeon. Lieut. Wales, on being relieved by Capt. Johnson, is ordered to Ft. Bayard, N. M., for duty at that station.

Capt. Walter Reed, Asst. Surgeon U. S. A., upon the arrival of First Lieut. Charles F. Mason, Asst. Surgeon, at Ft. Snelling, Minn., will be relieved from duty at that station, and will report in person to the commanding General, Dept. of Dakota, for duty as attending surgeon and examiner of recruits at the headquarters of that Department.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending September 3, 1892.

P. A. Surgeon E. H. Marsteller, detached from practice ship "Constellation," and to the Naval Academy.

Asst. Surgeon James Stoughton, detached from practice ship "Constellation," and to wait orders.

P. A. Surgeon W. F. Arnold, ordered to Naval Station, Port Royal, S. C.

P. A. Surgeon S. H. Griffith, detached from the U. S. S. "Jamestown," and to the U. S. S. "Constellation."

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ORIGINAL ARTICLES.

THE CONSERVATIVE TREATMENT OF LACHRYMAL OBSTRUCTION.

Read before the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, June, 1892.

BY S. D. RISLEY, M.D.,

Attending Surgeon at the Wills Eye Hospital, Lecturer on Ophthalmology in the University of Pennsylvania. Professor of Ophthalmology in the Philadelphia Polyclinic and College for Graduates in Medicine, Philadelphia.

However perfect the eyes may be in other respects, comfortable vision cannot be enjoyed if the tears are retained in the conjunctival sac. The frequency of annoyance from lachrymal retention I believe is underestimated. We are too prone to think only of the large group of patients who suffer from epiphora consequent upon a more or less complete obstruction of the drainage system throughout its course or at some point in the canaliculi, sac, or nasal duct; or of the more pronounced cases of acute or chronic blenorrhœ. There is, however, a very large number of people who suffer more or less constant annoyance from a partial retention of the tears which rarely or never amounts to stillicidium, but which nevertheless keeps up a conjunctival hyperæmia from the constant soaking in tears. The retention may be so slight, or may have come on so gradually, as not to have fixed the attention of the patient, who will come simply for relief from discomfort in using the eyes. My first lesson in this group of patients was learned now many years ago by the case of a medical friend, who came because of his inability to read with comfort, particularly in the evenings. His glasses were carefully adjusted, but without affording relief. There was slight catarrhal conjunctivitis, and too red caruncles, which persisted in spite of washes and various applications. He made no complaint of epiphora and there were no indications of trouble in that direction until one blustering day he came hurriedly from his professional rounds, and I witnessed for the first time his eyes suffused with the retained tears. The puncta were then recognized as extremely minute. These were at once dilated with a fine conical probe, the point of a syringe introduced and a warm solution of boracic acid thrown freely through the duct. A second treatment relieved him permanently of the annoyance which for months I had vainly striven to remove. Attention once called to these cases of concealed retention I was surprised at the frequency of their occurrence, and the readiness with which relief can often be given. The cause, however, is by no means always to be found in the contraction of the lachrymal punctum but perhaps quite as frequently in some irritation in the nostrils leading to a turgid condition of tissues in and around the nasal end of the duct. The study and treatment of these minor cases of lachrymal retention, led to some interesting observations regarding the punctum lachrymarum. In the attempt to dilate it I noticed that the probe was grasped as by a sphincter muscle. I suggested to my friend Dr. B. A. Randall, who was at that time associated with me in practice, that a careful anatomical study should be made of the part. Material was procured and the existence of a triangularly arranged series of muscular fibres were without difficulty demonstrated, a drawing and microscopical sections of which I here present. In cases where simple dilatation of this sphincter punctæ lachrymarum does not suffice the fibres should be nicked by means of the blunt pointed Weber knife, in the direction of the canaliculus. The fine tip of a syringe can then be inserted without difficulty, and many cases of a more serious type of disease than the one above described can be treated by this means alone, the duct being treated by syringing with a variety of solutions instead of by probing and syringing combined.

By these experiences I was convinced that a more conservative treatment of disease of the lachrymal passages than I had before employed was sufficient in a large number of cases. It was possible to thoroughly cleanse the lachrymal sac and to inject any desired application for the relief of the inflammation of its walls, through the dilated or enlarged punctum, without slitting the canaliculus.

It is not intended by this to imply that all cases of lachrymal obstruction can be treated successfully without the use of probes, but that simply I have by this means been able to relieve a certain number of cases which it had been my practice to treat by the method of Bowman. This experience has, however, had the additional effect of introducing a more conservative management of even the severer forms of lachrymal disease. It is probable that we have been too prone to draw analogies between closure of the lachrymal passages and urethral strictures, and have in consequence adopted the same theoretical considerations as a basis of treatment. The peculiar anatomical arrangement of the canaliculi and their relation to the common duct by which the tears are conveyed into the lachrymal sac, should not be thoughtlessly disturbed by slitting the canal up to its orifice at the sac. I do not think this can be done without in a measure disturbing the physiological function of this admirable apparatus. At no time should the incision be carried further than the beginning of the common duct. This will suffice for the insertion of any probe which it is wise to pass through the bony duct, except in comparatively rare instances where the duct is much larger than the average as found in the dried skull.

In those cases where probing the duct is needful, the disease has usually been of long standing and has resulted in a more or less uniform thickening of the lining membrane, which has either partially or completely occluded its lumen. The same patient will frequently exhibit great variation in the degree of occlusion. During acute exacerbations the closure is complete and the sac will be distended by the accumulated tears, mucus, dust, etc., which is swept into it from the eye, or by the secretions from its own walls, while at other times the tears find their way into the nose with difficulty through a much narrowed duct.

The surgeon will usually be consulted for the first time when the annoyance is exaggerated by the acute conditions fastened upon a chronic trouble. The passage of the probe at such times is often necessary, and always a temptation to the surgeon, but when done should be undertaken with caution, since the inflamed mucous membrane lining the irregular bony walls of the duct is not only tender but is liable to fold in front of the probe and be perforated or torn, an accident which invariably retards the progress, makes the patient worse and complicates the subsequent treatment. I have again and again seen permanent injury result from this accident. Under these circumstances if the probe does not pass with the exercise of mild force I have desisted from any violence and for a few days treated the sac by syringing, paid careful attention to any trouble in the nostril, and if reaction was marked, applied hot water compresses to the side of the nose and over the sac. *When the acute stage has subsided the probing is* again attempted. A few drops of a 4 per cent. solution of cocaine thrown into the sac, after thorough cleansing, will not only relieve the pain from the probing but by contracting the turgid tissues permit its readier passage. It has been my habit to pass a probe sufficiently large to fit closely and allow it to remain for half an hour. After a few minutes a "throbbing" sensation in the region of the duct comes on which later disappears. The probe should then be withdrawn, and the duct thoroughly washed with a warm saturated solution of boracic acid, or Dobell's solution, and this followed by some astringent. I employ a solution of silver nitrate gr. j., f℥i, or a light wine-colored solution of iodine. This can be prepared by a drop or two of tinct. of iodine, or Lugol's solution in a half ounce of distilled water. Weak solutions of tannin are often useful.

In *acute* blenorrhœa of the sac, if seen early, hot water compresses are directed and if possible the sac flooded with corrosive sublimate solution $\frac{1}{8000}$, or what is often better, by solutions of blue pyoktannin. If the swelling is great and suppuration evident, the sac is opened in the usual manner and washed with the sublimate solution or pyoktannin through the incision, and hot water compresses continued. As soon as the swelling subsides the canaliculus is opened and the probe passed into the nose. The incision on the face rapidly closes and the closure of the duct which usually precedes the acute blennorrhœa treated in the manner above described. By these means I think it is possible to avoid the painful and I believe often injurious treatment by incision or by passing large probes with the idea of stretching or rupturing strictures of the duct. While by these means immediately good results are marked the closure recurs in a worse form than before. I have in a few cases seen narrow paper like strictures in which such treatment was indicated. In only one case have I ever felt justified in incising a stricture. In that instance it was a thin elastic membrane at the bottom of the sac. I long ago pointed out that the proper office of the probe is to place the thickened membrane under pressure for the time between the probe and the bony walls of the duct, and by this means hasten the absorption of inflammation products, much as the thickened edges of an old ulcer of the leg were removed by strapping.

The conservative management here urged, finds added force when we consider the etiology of this troublesome and frequent affection. Sudden onset of inflammation leading to obstruction of a hitherto healthy duct and sac has in my experience been rare. Inquiry will usually elicit the fact that the acute blenorrhœa is usually fastened upon a long standing case of more or less complete obstruction. Our task therefore is to discover the cause of the chronic disease.

I recall one case which may be regarded as an exception to this rule. A man in middle life came for relief from epiphora. The closure seemed quite complete, the parts were inflamed, and any attempt to pass the probe was extremely painful, and aggravated his trouble. Inquiry about his health discovered a syphilitic node on his scalp which had been incised by a physician who had mistaken it for an abscess. He had had the initial lesion several years before, had a syphilitic child, and his wife had had two miscarriages. All active local treatment for his lachry*mal trouble was omitted and the mixed internal* treatment prescribed under which he made a rapid and complete recovery from the lachrymal disease.

A frequent cause of the affections of the duct is to be found in the nose. I have often surmised that certain deformities of the bony duct may be associated with the frequent deformities of the bones of the nose. In a few instances this has seemed almost a certainty, but I have not had opportunity to demonstrate it upon any anatomical preparation. A very cursory study of any series of skulls, however, reveals great variety in the size and form of the duct. *It is* certain that in a considerable percentage of cases the lachrymal disease does not improve until attention is paid to the nostrils. I recall the case of a gentleman in middle life, suffering from epiphora, whom I treated in 1879. He was a large muscular man, in good health. Bowman's probes of medium size passed with but little difficulty through the duct. There seemed no reason why his epiphora should exist. Incidentally he called my attention to some trouble with the corresponding nostril which he hoped could be relieved. *I discovered a broad superficial ulcer on* the floor of the nostril, which spread itself around the orifice of the lachrymal duct, and over the anterior end of the inferior turbinated. This rapidly healed under a few applications of silver nitrate and the epiphora disappeared. Since *then the nostrils* have been subjected to inspection in all cases of lachrymal trouble. The frequency of the association of epiphora with various forms of nasal trouble will, I am sure, surprise the surgeon who has not investigated it as a routine matter.

It is by no means sure, however, that in all cases of such association that the lachrymal disease is an extention upwards *of the inflammation in the nos*tril. While this I think is unquestionably true in some cases, as has been *demonstrated by Dr. Harri*son Allen, and in my own practice many times, and quite recently by Dr. Geo. E. de Schweinitz in *a most* instructive group of cases presented to the Philadelphia County Medical Society, it is altogether probable that in certain other cases the trouble in the nostril is secondary, being caused by the absence of the tears, which serve the purpose of cleansing, and keeping the parts moist. It is folly to probe a lachrymal duct day after day, so long as its lower end opens into the infectious accumulations of a diseased nostril without at the same time giving proper attention to the existing nasal affection. The lachrymal diseases of childhood are ordinarily of this class.

In a still larger group of patients the lachrymal retention is apparently due to a persistent hyperæmia and turgidity of the mucous membrane, common alike to the conjunctiva, caruncles and lachrymal apparatus. In these cases but little is to be gained by any method of treatment directed to the drainage system alone. It will be found that this condition is another link in the chain of symptoms produced by eye strain, just as blepharitis ciliaris is due to the same cause, as was pointed out by Roosa in 1876.

In some collated, but not yet published statistics, I have shown that in 86 per cent. of all cases of blepharitis it had been found necessary to correct some existing error of refraction or muscular balance. In my paper on incipient cataract, read before the Section last year, I pointed out the large percentage of epiphora associated with the inflammatory conditions of the internal tunics of the eye. In a word, this hyperæmia of the external tunics, including the lachrymal apparatus, is often but the outward expression of intra-ocular conditions. The refraction errors and muscular anomalies are the most frequent cause of the turgid choroidal and retinal circulation. It is in this large group of patients that we find lachrymal retention so common. Given the tortuous uneven walls of the average nasal duct, line it with an engorged mucous membrane, and it is easy to mistake a bony prominence in the duct, for a stricture, especially when it is encountered at the end of a lachrymal probe. This is particularly true where we are led to anticipate the existence of a stricture because of the retained tears. We have here all the conditions for the establishment of a so-called vicious circle. An engorged membrane partially or wholly closing the nasal duct retards the onward movement of the tears, containing as they do in suspension, the mucous and dust from the conjunctiva and cornea, and the excreted products from the interior of the eye. The presence of this accumulation aggravates the existing local conditions, and it would be just cause for surprise if nutritional changes in the mucous membrane of the drainage system did not supervene, and more or less complete closure of the duct result through thickening of the membrane.

That this reasoning is not at fault, is substantiated by abundant experience. Many cases might be cited in demonstration. The following will serve as the representative of a large group which might be brought forward:

A. A. B., æt. 60. In good general health, a wealthy merchant, has been annoyed by epiphora for twenty years. Now worse, now better, but never absent, but much worse of late years. He has been a life long victim to attacks of sick headache and "weak eyes." He is a great traveler, and a man of broad culture and general intelligence. Both inferior canaliculi had been slit by Abadie, and he has been treated by probing and syringing many weeks at a time in several European cities by surgeons of great celebrity. He had given up all expectation of relief from his epiphora, but came for some advice about his reading glasses.

O. D. V=6÷xxx+1.25c. ax. 180°. V. 6÷vi; O. S. V.=6÷xviii +.65c. ax. 30° V. 6÷vi. The ophthalmoscope revealed a large semi-atrophic crescent embracing the temporal margin of both optic nerves, the choroid was woolly in the periphery, and in many places honeycombed.

The tarsal borders of the lids were red and thickened, the retro-tarsal folds and caruncles swollen; the eyes were suffused with tears. No. 3 of Bowman's probes passed tightly, but smoothly, through the nasal ducts, and fluid passed freely into the nose. He was given a collyrium of boracic acid to use freely with an eye cup, and a solution of homatropine to be used three times daily. The eyes were to be protected by smoked glass in bright light, and all use at near work avoided. The general conditions rapidly improved under this regimen and the daily treatment of the tear ducts. In a week the correcting glasses were ordered for constant wear, and a suitable combination prescribed for reading. In a month his epiphora had disappeared, he had no return of his headache, and his visits ceased. In six months he returned with a slight recurrence on the right side. His glass over this eye no longer gave him normal acuity of vision, and it was found necessary to change the axis of the cylinder from 180° to 15° and to make it slightly stronger when the retention of tears again promptly disappeared.

Many cases of like import might be recorded if it were needful to enforce still further the wisdom of conservatism in the management of an affection depending upon what at first sight might seem a remote etiological factor.

Discussion.

Dr. H. Gradle, Chicago:—In connection with diseases of the lachrymal passages our treatment and prognosis can only gain in certainty by a strict discrimination between the different forms of disease. This is not sufficiently recognised in the text books, although the speakers who have preceded me may have pointed it out. We must exclude all cases of reflex lachrymation without disease of the ducts. As a rule we can get the distinguishing criterion from the patient, where the duct is open the tears run *through the nose* when the eyes water. If the patient does not give this history, we can test the patentcy of the duct with the syringe or probe. Generally that is superfluous. In speaking of disease of the lachrymal passages, I exclude all these cases of reflex lachrymation with patentcy of the duct, and refer to those only where the duct or sac is at fault.

The text books speak of two classes of disease of these passages: 1, stricture somewhere in the duct or sac. 2, suppurative dacryocystitis; but they make no great distinction in treatment. These two classes are not identical and can be thoroughly separated in every respect. Stenosis of some part of the tear passage, does not endanger the eye from infection. There is nothing but stagnation of tears. On the other hand suppuration of the tear sac is not necessarily accompanied by stenosis, although it usually is. I have often been astonished to find very little resistance in entering the suppurating tear duct with the knife. Moreover, a point which is not commonly known is that in small children suppurative dacryocystitis can be cured without any operative interference simply by expressing the purulent contents of the sac regularly for a few weeks in succession.

In looking over my experience for the past two years, I find that the cases of disease of the lachrymal passages presented one or the other of two different types. There is scarcely any connecting link between these two classes. One class of patients state that the eyes water only when out in the wind or when they use the eyes severely. In the other type the eyes water all the time and we see that the internal canthus is suffused with tears during the entire examination. The prognosis in the two classes is entirely different. What the pathological differences are, I am not prepared to say, but I can make this clinical distinction that in one class, there is lachrymation only from external stimulation, while in the other class there is continued lachrymation, evidently from some irritant point either in the nose or lachrymal passage. The first class of cases get well with very little treatment. If we split the duct freely in this class of cases, a single operation will be sufficient. I have also probed and syringed but have an impression that these procedures are often superfluous. In cases of non-suppurative stenosis of the duct, I find that one, two or three sittings with electrolysis are sufficient, provided the eyes water only in the wind. On the other hand if the eye is continually suffused with tears, I have learned to regard the prognosis as very grave. A large proportion of these cases can be cured, but we cannot guarantee that there will not be a relapse. In other cases we cannot even cure the lachrymation temporarily if the patient does not continue treatment a very long time. We can gain a great deal by paying attention to the nose, but even with that many cases of the second type can not be absolutely cured.

Dr. H. M. Starkey, Chicago:—I was particularly interested in Dr. Risley's paper, because some of the points made in the paper were the important points to which I had intended to call attention had I been able to prepare the paper announced upon the programme. For the past eight years, I have found it advisable to use the knife and probe less than formerly and the syringe more, and have found it unnecessary in many cases to slit the canaliculus which is so often done as a preliminary to the treatment of the nasal duct. I was pleased to see in Meyer's work that he condemns this as a routine treatment. It is certainly very easy in a large proportion of cases to so dilate the punctum as to allow easy ingress for a No. 7 or No. 8 Bowman's probe. Usually the tissues at the inner part of the eye are sufficiently lax to permit of the turning of the probe. If this can be done, it is of advantage as it does not produce mutilation.

When we come to the treatment of the nasal duct and the lachrymal sac, we have to note the different varieties of disease there present. The remarks which I make apply particularly to cases of catarrh of the nasal duct and lachrymal sac. We have here a condition different from that found in stricture of the urethra, to which these cases have been compared. We have a small bony canal with its periosteum and connective tissue lined with mucous membrane. These tissues very nearly completely fill the lumen of the canal, so that there is no patulous canal, or a canal through which a large volume of fluid can flow at any time, as in the urethra. Here a slight degree of swelling will necessarily close the canal against the passage of tears. In other similar conditions we treat the case mainly by topical applications to the inflamed mucous membrane, and if practicable this seems to me to be the most rational treatment to employ here. While in many cases, the probe is necessary, I have found almost uniformly that frequent probing is unnecessary, and the point which I make particularly and which has not been brought out here, is that we should teach the patient as early as possible to wash out the lachrymal passage for himself. They almost invariably say that they cannot do it and it is something of a trick but in front of a glass they can soon learn to introduce the nozzle of the syringe, and then they soon learn to do it without the aid of the glass. If this is done frequently and antiseptic solutions are employed, the cure is much more rapidly attained. Afterwards, the patients continue this treatment at home, the injections not being so frequently repeated.

Of the utmost importance to the patient is the choice of lachrymal syringe. The easiest for the patient to use as well as the simplest and cheapest is the ordinary glass medicine dropper with point so drawn out as to easily enter the dilated punctum. Armed with this instrument I cannot recall a case where the patient has failed in his attempts to irrigate the lachrymal passages.

Dr. George M. Gould, Philadelphia:—The last speaker recalls to my mind a little point. Some of you may not have seen the last number of the *New York Medical Journal*, in which I have described a simple method by which in epiphora, etc., the patient can treat himself. The head is canted back and the inner canthus filled with an antiseptic and astringent solution. Then, with the finger pressing on the sac, it is emptied. When the finger is removed the sac expands, and the fluid is drawn in. Then pressing back towards the nose, some of the antiseptic fluid is forced into the duct. By repeating this process, the duct becomes antisepticized. I have had excellent success with this method. One lady who had had dacryocystitis for about sixty years, came back in one week cured. There is one thing that it is well to bear in mind: Never destroy a physiological structure if you can help it. No one seems able to describe the function of the puncta, and we therefore act as if the puncta had no function. I think that it has a definite function, and that we should be slow to injure the puncta, for slitting destroys their function forever. The function of the puncta is, I think, to serve as sifters of dust, etc., preventing their entrance into the duct, and we should therefore hesitate before destroying them.

I rose, however, more especially to call attention to the method which I have described. Dr. Risley has demonstrated that the duct should never be injured by a probe being crushed into it. In that way cases are made obstinate by the contraction of cicatricial tissue. I have no doubt that in a few years the probe will rarely be used in any case of duct disease. If there is stricture, the method that I have described will do no good. If functional, as nine-tenths of duct troubles are, the result of slight inflammation closing the capillarity of the tube, this method differentiates it, and if it cures it that is all that is needed. If it does not cure it, cutting may be resorted to, as advised by my friend Dr. Thomas. I think that in the future, the two methods of treatment will be, the method which I have mentioned, and incision with a proper knife.

Dr. R. Tilley, Chicago:—The point advanced by Dr. Gould is an important one. I do not know that I have ever seen anything in regard to the function of the puncta, but it has seemed to me that they act rather as favoring capillary attraction than as sifters of dust, and that by this capillary attraction, the tears are passed down more readily than by a larger canal. For this reason I have interfered with the puncta as little as possible. If they are to be destroyed at all, I would rather do so by a clean cut than by stretching. I do think that we should avoid any disturbance of the anatomical character of the puncta as much as possible.

It does seem amazing to listen to the reports of cases of excessive lachrymation as cured by various methods. It seems to me almost as impossible to cure by the simple means referred to some of these cases of excessive lachrymation, as to make the waters of the Mississippi go down the channel of the Illinois River.

Dr. G. E. de Schweinitz, Philadelphia:—I have listened with pleasure to the scholarly paper of Dr. Gradle, and desire to refer to one or two points in this connection. He calls attention to the condition of the optic nerve in certain atrophic conditions of the nasal cavity. This relationship has received some notice in Germany, and my own attention has been called to it in Philadelphia by Dr. Harrison Allen. In some patients affected with atrophic rhinitis, an examination of the eyes will reveal distinct discoloration of the optic papilla, and although there may be no deterioration of central vision, there is often decided contraction of the visual field. This contraction may affect the form fields, or be limited to the color fields alone, and the contraction will usually be found to be greatest in the eye on the same side in which there is the most marked atrophy of the tissues in the nasal chamber. I understand very well what a large personal element enters into the taking of color fields, and how readily mistakes may occur, but if it is conscientiously done, repeated a number of times and, if necessary, controlled by independent observers, very trifling changes may be detected and very interesting results achieved.

Dr. Gradle's classification of the various causes for epiphora is interesting. In this connection I would like to call attention to the fact, well known, to be sure, but which often escapes attention, that epiphora may be one of the ocular symptoms, very well marked in cases of locomotor ataxia. I have sometimes seen it when other characteristic phenomena, for example, the Argyll Robertson pupil, temporary diplopia, insufficiency of convergence, anæsthesia in the area of the supraorbital nerve, and the early discoloration of the optic papilla, are absent.

Dr. Thomas, to my mind, has presented a strong argument in favor of stricturotomy in certain cases of obstructive disease of the lachrymal passages, and I am particularly impressed with the valuable points he has brought out, and with the ingenious knife which he has devised and exhibited. I hope when he closes the discussion he will state a little more explicitly the exact method of the introduction of this instrument.

Dr. Gould's suggestion, it seems to me, is worthy of careful investigation. In curious confirmation of what he says concerning the *habitat* of the gonococcus is the well known fact, especially dwelt upon by Horner, that gonorrhœal ophthalmia almost never produces dacryocystitis, because the germs do not find a favorable soil in the mucous membrane of the duct and sac. An exception to this is the association of purulent ophthalmia and purulent disease of the lachrymal sac in connection with certain exanthematous diseases, but then in these diseases there is also a rhinitis, which is probably the primary factor.

Dr. Leartus Connor, Detroit:—I have not had the opportunity of hearing all the papers, and perhaps the points which I wish to make have already been referred to. In the little note that I made yesterday, I called attention to one case in which exophoria produced distinct, long-continued rhinitis. I have seen a number of cases in which the canaliculus had been slit and the duct treated with probes for a length of time, without satisfactory relief, entirely cured by the relief of an existing eye strain. In managing a case of epiphora, I first remove the eye strain. A large proportion of the cases in the early stages are relieved by removing this source of irritation to the lachrymal apparatus. I accept the view that if it be possible to maintain the anatomical and physiological structure of the lachrymal passages, it should be done. I have therefore followed the line of treatment referred to by Dr. Gould, and thus relieved a certain proportion of cases. Finally, we come to a class of cases where the disease is not relieved by the measures mentioned, and then the knife and probes have done me great service, and I should be loath to throw them aside. I have had the greatest satisfaction in the use of Williams' probes, but it is extremely difficult to procure these made in the proper way. The probe should be stiff and elastic, so as to bend without tearing the tissues. With these probes I have been able to pass through strictures of the lachrymal passages without injury to the tissues, a thing I could not have done so well with the stiff Bowman's probe.

Dr. Charles Hermon Thomas, Philadelphia:—In regard to the parallelism between the conditions found in urethral surgery and in that of the lachrymal duct, of course it is easy to force the comparison too far. The conditions are not identical, yet in some respects they are parallel. There is one point of likeness however, which may be stated emphatically, and that is that in treating stricture of the urethra, every good surgeon considers it all but criminal to make a false passage, and the same is true in regard to stricture of the lachrymal duct.

If there is one thing more than another which should be borne in mind in carrying out the plan which I have suggested, it is to *take time* to get though the stricture by means of dilatation, and not by forcing. No surgeon would think of making enough pressure to force a false passage in the urethra. He would repeat the attempt, sitting after sitting. In trying to get through these strictures I take all the time that may be required. I try first to coax through by the Williams' probe. If it does not pass, Anel's probe is to be tried. If this fails to find a passage, I wash the duct out with the syringe and tell the patient to come the next day. After a way through has been found the conical end of the stricturotome is to be introduced, and using it persistently as a dilator, it is passed through the stricture. Then a draw cut, not a cut by thrusting, is made. The incisions are to be made laterally and in front. In this way it is impossible to do harm.

A particular point is to be noted in regard to slitting the canaliculus and the opening into the sac. One gentleman asked if I had ever known an instance of shrinking of the opening into the sac. I have known such cases. This trouble was met with when I used the Weber knife. I now use a director and Beer's knife, pass it along until the knife has entered the sac completely, then withdrawing elevate it a little and cut upwards making a free opening in the sac. There is no more danger of such an opening closing than of the canaliculus closing.

I agree with all that has been said in regard to Williams' probes. As to Bowman's probes, if they are to be used at all they should be provided with conical tips.

Dr. Samuel D. Risley, Philadelphia:—I have but little to add to this interesting discussion, but am much gratified at the tendency to conservatism manifested by the remarks already made. What I wished to enforce in my paper was the possibility of treating these forms of disease without recourse to the violent measures which were employed during the early days of my ophthalmic career. I distinctly remember seeing large probes passed forcibly through the bony duct, which could have no other result than crushing the bone and doing permanent injury. Even in later years, I have seen cases where I felt sure that the existing form of the disease was due in large measure to the violent methods of treatment to which the duct had been subjected. I have had no experience with the slitting of so-called strictures of the duct. As I pointed out in the paper, I think that stricture in the ordinary sense, that is a closure of the duct at one point, is comparatively rare; that the closure is due to more or less uniform thickening of the lining mucous membrane, and reasoning *a priori*, to pass a knife through this, however gently, and cutting it must leave a scar in the mucous membrane, and every scar is an injury to the tissue. This is simply reasoning without experience, however, and I have no doubt that Dr. Thomas's observations have been accurate and thoroughly conscientious, and do not criticise his methods. It has always seemed to me to be more rational to get rid of the thickening of the duct by gentle means.

I was interested in Dr. de Schweintz' remarks in reference to the narrowing of the field of vision. I did not hear Dr. Gradle's paper, but judging from the discussion I think that he alludes to intra-ocular conditions found in association with nasal disease. I have seen a number of interesting things in this line and now have under treatment a young woman with impaired central vision and much contracted field both for form and red and blanching of the outer half of the optic nerve. I had seen her some years previously on account of a small coloboma of the nerve sheath. She came back with the condition described. Her father had had hæmorrhagic glaucoma, for which I did iridectomy and subsequently had to remove the organ. We can therefore understand what great anxiety must have been caused by the failure in the daughter's vision. I could find no intra-ocular cause for it. She also had violent hemi-crania. I examined the nostril and on the corresponding side found the cavity quite thoroughly occluded by hypertrophic tissue. After a few days' treatment in which the hypertrophy was removed, vision improved, the field for form and red became almost normal. The central vision also improved and the hemi-crania disappeared.

Dr. G. A. Aschman, Wheeling, W. Va:—I was much pleased to learn of the advocacy of conservative treatment. I have always tried to avoid slitting of the canaliculus wherever possible. There is one point which should be emphasized to the profession generally. It has been the experience of every one to have a patient referred to him after the family physician has slit the canaliculus, generally he does not use probes. In the majority of cases this fails to give relief and the patient is sent to us. Often a great deal of harm has already been done. As Dr. Tilley thinks, there is a capillary attraction here which is lost when we cut the puncta.

In regard to the point with reference to gonorrhœa passing through the nostril to the eye. I was struck by the point all the more because in one of my cases after closing the puncta on one side, secretion seemed to increase on the other side. There is undoubtedly some connection between the two.

In regard to closing the puncta to prevent inoculation from the lachrymal sac, I would state that in speaking with Dr. Knapp, he said that he had used the electro-cautery but had not always succeeded in closing the puncta sufficiently. So far I have had no difficulty if it is thoroughly done after treating by injection the canaliculus and sac. There has been firm adhesion in all cases. So many eyes have been lost in this way that it is important that we should find some reliable means of excluding infection from the sac.

Dr. George M. Gould, Philadelphia:—I only wish to add a word in regard to Dr. Conner's case. The reports of such cases are often looked upon with suspicion. If there is anything certain it is the fact of the existence of reflex neuroses. I wish to support the case cited by Connor by a case of my own. Mr. T., a well educated gentleman and one who has not the least sign of hysteria, finds hat whenever he wears a stronger myopic lens given for temporary use than the one ordered "for constant use" he will have all the symptoms of an intense common cold. In two hours the nose will become congested and run, the voice will become hoarse—in a word, there will be all the symptoms of an acute coryza. Putting on the weaker glasses these symptoms will in two hours disappear. This has been repeated so frequently that there can be no question in regard to it.

INSUFFICIENCIES OF THE OBLIQUE MUSCLES AND HOW TO CORRECT THEM.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY G. C. SAVAGE, M.D.,
OF NASHVILLE, TENN.
PROF. OF OPHTHALMOLOGY AND OTOLOGY IN THE MEDICAL DEPARTMENTS OF THE UNIVERSITY OF NASHVILLE AND VANDERBILT UNIVERSITY.

In the *Archives of Ophthalmology*, Vol. xx, No. 1, 1891, I announced my discovery of "Insufficiency of the Oblique Muscles." I closed that paper by saying of the nervous symptoms brought about by that state: "I can see no hope of prevention or cure." On the 17th day of May, 1892, while a patient was before me whom I had known to be a sufferer from this condition for two years, and to whom I had often said, "There is not now, nor can I see how there ever can be, any relief for this trouble," a thought of the proper means of correction dawned upon me. I at once applied the newly thought of principle in this case, and with the most gratifying results. Of this case I shall have more to say before closing this paper.

Before setting forth the treatment I will refer to the condition itself, and the proper means of detecting it. In doing this, since I cannot do better, I quote from my paper published in the *Archives:* "Every ophthalmic surgeon, however skilled in correcting errors of refraction and in operating for the different known forms of heterophoria, has had cases of eyestrain for which he could do but little. In investigating a few such cases during the last six months I have found the cause to be a want of equilibrium on the part of the *oblique muscles.* The detection of this condition is easy. I place a double prism (my modification of the Maddox prism) before one eye, the other for the moment being covered, and ask the patient to look at a horizontal line on a card held 18 inches away. The effect of the double prism (each 6° base in), so placed that the axis is vertical, is to make the line appear to be two, each parallel with the other. The other eye is now uncovered, and a third line is seen between the two, with which it should be perfectly parallel.

"While a change of the position of the axis of the double prism from the vertical towards the horizontal will alter the distance between the lines, their direction will be unchanged, hence no loss of parallelism. This fact admits of a little carelessness in the placing of the prism in the trial frames, though the axis should be vertical, so as to give the maximum distance between the two extreme lines.

Fig. 1.

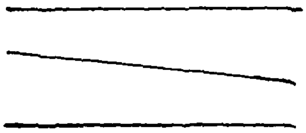


Fig. 3.

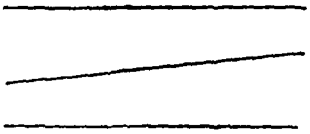


Fig. 2.

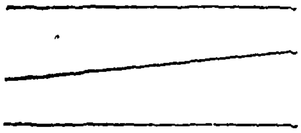


Fig. 4

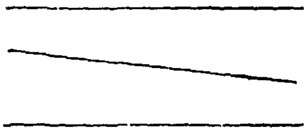
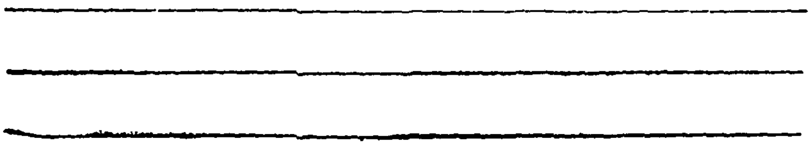


Fig. 5.



"If there is a want of harmony on the part of the oblique muscles, this test will show it at once in a want of parallelism of the middle with the two other lines, the right end of the middle line pointing towards the bottom, and the left end towards the top, line, or *vice versa,* depending on the nature of the individual case.

"In my investigations I have always considered the eye before which *no prism is held as the one* under test. With the double prism before the right eye, the patient is asked about the position and direction of the middle line. It may be nearer the bottom, thus showing left hyperphoria; or again, it may extend farther to the right than the other two and not so far to the left, thus showing exophoria; or *vice versa,* showing esophoria. If the right ends of the middle and bottom lines converge while the left ends diverge, the superior oblique of the left eye is at once shown to be in a state of underaction. Fig. 1 represents such a test of the left eye. Fig. 2 shows a test of the left eye when the inferior oblique is the too weak muscle. Fig. 3 represents a test of the right eye, the loss of the parallelism between the lines *being due to underaction of its superior oblique, and* Fig. 4 the same condition of the inferior oblique of the right eye. Fig. 5 represents a test of both eyes when there is perfect equilibrium of the oblique muscles.

"As is well known, the function of the oblique muscles is to keep the naturally vertical meridians of the two corneæ parallel even when not vertical [except in cases of uncorrected oblique astigmatism as shown in Vol. i, No. 1, of the *Ophthalmic Record*]. This must be, or a troublesome form of double vision will result. If there is a perfect equilibrium of the obliques, this parallelism of the meridians named is maintained without trouble; but if the superior oblique of either eye be too strong for its inferior, or *vice versa,* the parallelism of the vertical meridians is preserved, and double vision prevented, only by excessive work on the part of the weaker muscle. This condition of the oblique muscles brings on, at longer *or shorter intervals, a train of nervous symptoms* f which, at present, I can see no hope of preventic or cure."

As can be readily seen, the condition described the was *symmetrical insufficiency of the obliques.* Up that time I had not seen, nor had I heard of, a case of *non-symmetrical insufficiency of the obliques*. Dr. Moulton, however, reported such a case in a letter[1] to the editor of the *Ophthalmic Record*. I had reasoned that such a condition would not give trouble, since the strong muscles would be allowed to act, thus revolving the two eyes in the same direction, but causing no disturbance of vision. I still believe this reasoning correct except in cases of corrected astigmatism. Such a case Dr. Moulton reported, asking for an explanation of the fact that it became necessary for him to rotate his 1.00 D. cylinders from 90° to 100°, in order that the patient might have comfort, when several examinations under atropia had shown that the axis of each cylinder should be at 90°. My explanation, published in connection with his letter, was that there was insufficiency of the superior oblique of her right eye and the inferior oblique of her left eye; that these weak muscles, at the times of the several examinations, exerted their full amount of power and thus kept the best meridians at 90°; that these muscles at other times, because of fatigue, could not exert the necessary amount of power, and thus allowed their stronger opposing muscles (the inferior oblique of right and superior oblique of left) to change these meridians from 90° to 100°. It was at such a time as this that the doctor learned that the axes of his cylinders should be placed at 100°. Comfort came to, and remained with, his patient as a result of this little procedure. It was good ophthalmic practice, and should be followed in all cases of astigmatism where there is *non-symmetrical insufficiency of the obliques*.

In *symmetrical insufficiency of the obliques* the case is very different, both in principle and practice. It is for this latter condition that I am now able to point out the remedy.

To illustrate clearly the principle and practice I will take up for study the case of J. B. M., age 35, whose case I was studying the moment the thought of the cure came to me. Two years ago he came to consult me about a headache that for a long time had troubled him, and which was growing more severe. He had been advised that it was probably due to eye-strain, and if so, it could be cured by properly adjusted lenses. A preliminary examination showed only a slight error of refraction. This he consented to have corrected, hoping that he would get relief, other means having failed. Under homatropine the following correction was given:

O. D. V. 20-xx with + .25 ⊃ + .25 cyl., ax. 155°.
O. S. V. 22-xx with + .25 ⊃ + .50 cyl., ax. 90°.

It was determined at the same time that he had left hyperphoria. It was also determined that he had insufficiency of both right and left superior obliques. He was told that all but the latter could be corrected; that he would get some, but not complete, relief by wearing his sphero-cylinder lenses, the left ground on a prism of ½° base down; that, at times, the insufficiency of the obliques would give him trouble, for there was nothing that could be done for this condition. I did tell him that if, when engaged in near work, he felt a headache coming on, he might cover one eye with a flap, thus doing away with the strain necessary for harmonious action of the muscles of the two eyes. This he tried occasionally, but found it very inconvenient to work with one eye only. His attacks of suffering were greatly lessened in both frequency and severity for some months, as a result of the elimination of some of the factors formerly constituting the cause of his suffering.

He wore his spectacles continually, but after awhile his headaches began to return. They grew more frequent and more severe until he became an almost daily sufferer. Not infrequently on going home from his office his wife would have to put him to bed like a child. He would occasionally take medicines prescribed by his family physician to relieve the severity of the attack.

At intervals, during the whole time, he would consult me. When complaining I would tell him that I believed that the then-active cause was the insufficiency of his superior obliques, and that I was powerless to do more than I had already advised. A few months ago I made a second examination of his eyes under the influence of homatropine, but only to find that the result of my former examination was correct. I did not have to urge him to wear his glasses, because he had learned that he was more comfortable with than without them.

On the 13th of May, 1892, he came to me and said that I must do something more for him; that he must have relief. Reminding him that I had twice investigated his eyes and each time found the same conditions, and had corrected all that was correctable, I told him that I was willing to try again, but that I was now as unable to correct the insufficiency of his obliques as I ever was. In the course of this conversation I told him if he had but one eye, he would not be a sufferer. Deciding that it would be four days before he could return for another examination, he went away. On the 17th at the hour appointed he came, and without hope of finding an additional means of relief, I undertook the investigation again. The results of former examinations as to lenses were confirmed. My study of the recti muscles resulted as formerly in finding a left hyperphoria of ½. With the remark, "We will now look into that incorrectable condition," I began to investigate the obliques. Placing the 6° double prism before the right eye, the left eye (the one under test) showed the middle line dipping unmistakably to the right, as in Fig. 1, thus showing insufficiency of the left superior oblique. Transferring the double prism to the left eye, the right eye showed the middle line dipping to the left, as in Fig. 3, thus showing insufficiency of the right superior oblique. Having stated again that nothing more could be done for him, in a moment the thought occurred to me that, if a cylinder were placed before the eye in such a way as to make the line incline still more in the same direction, on removing the double prism the weak obliques would have to act more than usual in binocular vision. I reasoned that this overaction being in the nature of gymnastic exercise, if conducted properly must develop the weak muscles, and thus be a source of relief to the patient. Leaving the double prism in front of the right eye, I placed a + 2.00 cylinder before the left, and revolving it so as to bring its axis to 135°, the middle line was seen to dip very much more to the right. I then turned the axis back to 90°, when the dipping was the same as when no cylinder was on. Turning the axis of the cylinder to 45°, the middle line was made parallel with the other two (this little procedure of placing the axis of a cyl. obliquely first in one direction, then in the other, and watching the effect on the middle line, will establish or disprove the correctness of the diagnosis). The diagnosis made and positively confirmed, I at once commenced the gymnastic exercise by placing a + 2.00 cyl. before each eye, the axis of the right at 70° and the axis of the left at 110°. The patient was asked to fix his vision on a candle 20 feet distant (the double prism had been removed). In three minutes the axis of right cylinder was turned to 60° and that of the left to 120°; three minutes later the axis of right was placed at 50° and that of left at 130°; and again in three minutes the axes were changed, the right to 45° and the left to 135°. With each turning there was additional demand made on the superior obliques, the maximum being reached when the axes were respectively at 45° and 135°. With each turn the patient could feel additional strain. The cylinders were allowed to remain in this position of maximum effect three minutes, when they were removed and the double prism test was applied. There was the slightest, if any, dipping of the middle line. Both patient and practitioner felt encouraged. He has returned daily for the *exercise*, which has been conducted every time in the manner above described.

On the day after the first *exercise* he resumed his office work, which requires almost continuous near use of his eyes, and has been absolutely comfortable up to this time—the end of the eleventh day, and not one dose of medicine has been taken. For the last three days, before beginning the *exercise*, the test when applied to either eye showed but little, if any, want of parallelism of the lines. His improvement has been rapid and remarkable.

I have now under the exercise treatment a little girl, age 15 years, whose trouble is insufficiency of the inferior obliques. The dipping of the middle line is to the left in the left eye and to the right in the right eye—just the contrary of what was found in the other case. The *exercise* in her case is carried on by revolving spasmodically the axis of the right cylinder from 90° to 135°, and that of left from 90° to 45°, the reverse of the plan in the first case. She does not bear the exercise as well as the first patient, but her improvement in five days is noticeable.

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[1] See Ophthalmic Record, Vol. i, No. 4, 1891.

My records for the past two years show a number of cases of *symmetrical insufficiency of the obliques*, to all of whom I stated: "For this condition I can do nothing."

The condition is real, the treatment is rational and relief must follow. The condition is easy of detection and the insufficient muscle can be quickly located. The double prism before the right eye, the middle line is seen by the left (the one under test); if it dip towards the opposite (right) side, the superior oblique is insufficient (see Fig. 1); if towards the same side, the inferior oblique is insufficient (see Fig. 2). The same is true when the right eye is under test, as is shown in Figs. 3 and 4. In the treatment either concave or convex cylinders can be used; if the concave are used and the insufficiency is in the superior obliques, the axes must be placed in the lower nasal quadrant, if in the inferior obliques, then the axes must be placed in the lower temporal quadrant. If for the exercise the convex cylinders are chosen, the axes must be placed in the lower temporal quadrant for insufficiency of the superior obliques, and in the lower nasal quadrant for insufficiency of the inferior obliques. In either case the effect is increased as the axis is made to move from the vertical to the point of maximum effect, which is 45° from the vertical. The exercise may be commenced with a .50 to a 1.00 D. cylinder, and increased each day a .50 D. up to 3.00 D. The cases will be very rare that will require a stronger exercise cylinder than the last mentioned. The graduated exercise should be continued not longer than twelve or fifteen minutes daily. Each eye being affected, the exercise cylinders are placed before both at the same time.

Discussion.

Dr. H. Gradle, Chicago:—Any one taking the trouble to examine the eyes of healthy individuals as to the condition of the muscular balance can convince himself that in a large number of individuals, the muscular balance is not perfect when binocular vision is absolute. There occurs vertical and lateral, as well as the rotatory deviations, described by Dr. Savage. Whether these deviations are the cause of the eye strain and other nervous symptoms attributed to them by certain eye surgeons, is an open question and I do not think that this is the proper time to discuss that question, but I would ask whether any tests have been made to prove whether or not the symptoms of eye strain and nerve strain are due to the deviation. According to the theory, the muscles are strained in the interest of binocular vision, and if binocular vision is excluded the eye takes a position of rest. If one eye is excluded from work, there should be no eye strain. Has this experiment been made to determine whether the eye strain, headache, etc., were abolished by the use of one eye with the other excluded from light? I have done so in a certain number of cases of strictly latent deviation and found the test negative.

Dr. Charles Hermon Thomas, Philadelphia:—I have had some experience in the line which Dr. Gradle suggests. I have tried covering one eye where there were phoria faults and found negative results very largely; wearing the cover introduces a disturbing element. A better test is to correct the fault with prisms and note the results. Under these circumstances the answer is usually positive.

As regards the particular point raised in the paper, I made some tests according to the diagram of Dr. Savage in his publication of last year, and found that they held perfectly, but came to the conclusion that I could see nothing to be done in these cases. Exercise of the muscles of the eye with prisms has not yielded satisfactory results in my hands. The cylinders used as described by Dr. Savage seem to act as prisms do on the recti, and I should expect the same negative results which I have obtained from prisms used to exercise the other muscles. From an experience growing out of some hundreds of cases of graduated tenotomy I am satisfied that the latter may be expected to give much better results.

I did not mean to be understood as disapproving of the use of prisms for the direct compensation of defects made out. I have the greatest appreciation of them for this purpose, especially in the lower degrees. I do not believe, however, in the value of prisms as a means of exercise to permanently influence the nutrition of weak muscles.

Dr. Leartus Connor, Detroit:—My experience with the use of prisms differs from that of Dr. Thomas. Possibly the method of using partially accounts for this difference. I employ round prisms, so as to be able to shift them at any angle according as the weakness of any muscle may require. The prisms are set in ordinary spectacle frames that they may be worn constantly during a longer or shorter period as each particular case may call for. By such use of prisms alone, I have seen many cases of eye strain so completely relieved, that the patients were enabled to resume their ordinary duties, without the permanent use of any prism. It must be said that most cases of heterophoria are cured by the proper correction of their refraction. Such relief of heterophoria is most satisfactory. The class relieved by prisms just mentioned were those in which either there was no refractive defect, or it it existed, its correction left a distressing heterophoria. Another small class of cases require the constant use of prisms and experience such comfort and relief, that they will not part with them or consent to a radical cure by tenotomy.

In a fourth class of cases all the measures mentioned fail, and a more or less complete tenotomy is called for. Here the results I have found most satisfactory. I never do a tenotomy until convinced that spheres, cylinders or prisms are insufficient to give satisfactory relief. By their aid I have not yet failed to relieve the cases of insufficiency of the oblique muscles, described by Dr. Savage. It will give me pleasure to re-study the subject in the light of his interesting paper, and if the treatment suggested proves easier and more satisfactory, to accord him my cordial thanks.

Dr. G. C. Savage, Nashville:—One of the gentleman asks for proof that these muscle conditions can be properly charged with the suffering that we see. He wants to know if the correction of the error of refraction will not afford relief. I am before you a personal example on this point. I have a moderately high degree of astigmatism which was corrected some ten years ago. Before that I had sick headache. The sphero-cylinders which I wore relieved me of the pain above the left eye especially. From that time until eighteen months ago I would every week of my life, especially after I exercised myself in work, have a band-like feeling across my head from ear to ear. Dr. Stevens of New York, had told me that I had half a degree of left hyperphoria but I did not attach much importance to so low a degree; but I decided to have the left lens ground on a half degree prism base downward. There has never been that band-like feeling since. Eight years ago, I corrected the vision of a patient with hypermetropic astigmatism. I did not test for any muscular error. The sphero-cylinders gave relief for possibly two years. The suffering then began again and she finally lost the ability to read; and about two months ago she returned. She had about ten degrees of exophoria and I operated on her. There has been no suffering since I did the partial tenotomy of the rectus muscle.

Trying to use one eye is a source of trouble to any body. If we could get accustomed to it, heterophoria would be relieved by excluding one eye entirely. It has been claimed that when one eye was lost the other was stronger than the two had been. We now know why this is true. A simple prism will not exercise the oblique muscles in any position. The prismatic effect of a cylinder does exercise the oblique muscles as can be proven readily.

Hyposulphite Soda in Gastro-Intestinal Antisepsis.—According to Goll the abandonment of sodium hyposulphite in treating diseases of the stomach and intestines for other and newer remedies is a great mistake. In solutions it is far more efficacious than resorcin and all other stomachics used in the treatment of gastric and intestinal catarrh. Especially does it seem indicated in chronic catarrh: its effects in this direction are very marked.—*Pacific Record.*

EMBOLISM OF THE CENTRAL ARTERY, A THROMBOSIS? WITH REPORT OF A CASE.

Read in the Section of Ophthalmology at the Forty-third Annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY S. C. AYRES, M.D.,
OF CINCINNATI, O.

When the diagnosis of embolism of the central artery of the retina was made by V. Graefe in 1859, and so satisfactorily confirmed by Schweigge a year or two later by microscopic sections of the same eye, it seemed to have settled a hitherto obscure point. The pathological alterations coincided so exactly with the supposed cause of the sudden blindness, that no conditions were wanting to completely explain the case. The brilliancy of this case has not been dimmed by the passing years, for but few have been reported which have such clear cut points. In fact, subsequent investigations have shown that other pathological conditions may produce very similar subjective and objective symptoms, and it becomes a question of great interest to determine whether we are dealing with a case of embolism of the central artery or of thrombosis of the veins.

In 1874, the late Dr. Ed. G. Loring, of New York, reported in the *American Journal of Medical Sciences* five cases which had been designated as embolism by himself as well as by some of his colleagues, but where subsequent developments led him to change his opinion.

In his excellent Hand Book he discusses the subject in an exhaustive manner, and concludes by saying that in cases of so-called embolism, "too much significance has been laid upon the stoppage of the circulation by the importation of a plug formed at a distance, while not enough stress has been laid upon the mechanical actions regulating the supply of blood within the eye, as well as upon the conditions of the walls of the vessels themselves or their contents."

The ophthalmoscopic picture which embolism of the central artery of the retina presents, is familiar to you all, and I need not recall it. An empty condition of the central artery is prima facia evidence of an obstruction at some point, but is that necessarily an embolism? May it not be a thrombosis?

In Angeluccis' case it was shown that thrombosis of the vein caused occlusion of the artery by mechanical pressure.

Œdema of the retina, cherry red macula and narrowing of the arteries were all present here, yet the microscopic examination showed the arteries free from obstruction, and the disease limited to the veins. From a study of the recent literature on the subject, it seems that the opinion is gaining ground that many of the so-called cases of embolism are due to thrombosis of the artery or the vein. Is it necessary to wait for a post-mortem to settle these questions positively, or can we not by a careful differentiation decide while the case is still under observation?

Priestly Smith argues that spontaneous thrombosis of the retinal arteries may account for both the permanent as well as transient blindness. In *Oph. Review*, 1884, he differentiates spontaneous thrombosis as follows:

Previous attacks of transient blindness occurring in the blind eye as well as in the fellow eye, and associated with signs of disturbance of cerebral circulation at the onset of the blindness and with giddiness, faintness or headache.

The diagnosis of embolism so far as any systematic disturbances are concerned, is negative.

Michel, in 1878, in Vol. XXIV, *Graefes Archiv.*, reports seven cases of thrombosis. In one the microscopic examination showed that the lumen of the central vein was completely blocked by an organized thrombosis. The arteries were not diseased. He recognizes three degrees of obstruction.

1. Complete closure of the central vein associated with numerous hæmorrhages into the retina, and a grayish discoloration in the macula region with the usual cherry red spot.

2. Incomplete closure when all the conditions are much less intense, and 3, a simple stasis of the venous system with few ecchymoses and marked dilatation of the veins.

Hæmorrhages seem to be the most significant alterations in favor of thrombosis. They are more or less abundant, being dependent according to Michel in the degree of obstruction in the vein, and yet they are present in well authenticated cases of embolism.

Gowers says that thrombosis has been observed in the retinal artery with ocular signs identical with those of embolism.

Thrombosis of the central artery is reported by Parinaud (*Gaz. Med. de' Paris*, 1882), followed by cerebral softening. In this case there was sudden loss of vision, diminution in the calibre of both veins and arteries, œdema of the retina and hæmorrhages, and rapid development of atrophy of the disc.

Loring says that "all the cases of occlusion of the artery have been declared hitherto, by their authors at least, to be due to embolism in contra-distinction to thrombosis, but it must be admitted that *a priori* there is no reason why thrombosis should not occur."

In the discussion of a case of embolism of the left central artery by Dr. Oliver in the Trans. of the Am. Oph. Soc., 1888, Dr. H. D. Noyes remarked that in reality a large number of those cases are due to thrombosis, and this is proven by microscopic examinations. He said also that about the only typical case of embolism was that of Graefe.

What then have we to fall back on as positive evidence of embolism? The primary ophthalmoscopic appearance should not determine this point, but rather the secondary or remote conditions which follow sudden loss of sight—complete obliteration of a vessel, atrophy of the optic nerve, and total or almost total loss of vision.

Embolism is supposed to depend on organic valvular heart disease, and yet in Angeluccis' first case of thrombosis, the patient had organic heart disease and valvular softening, and yet the autopsy showed the arteries healthy and the disease entirely in the vein.

Allow me to present you in detail a case which came under my observation recently:

Mr. B., æt. 33, gave the following history, on March 22, 1892: he stated that he awoke this morning about six o'clock and at that time his eyes were all right. He then took a nap of probably half an hour, and when he awoke, his vision in the left eye was almost obliterated. I saw him about ten o'clock and then his vision was so reduced that he could only count fingers at 2'. His field of vision was entirely obscured except in a sector like space below, through which he could count my fingers at 2'. The retina presented an appearance very closely resembling embolism of the central artery. There was an opaque area of retina crescentic in shape extending from the disc to the macula both above and below. It was not so white as is sometimes seen, but presented more of a feathery appearance. The optic disc was normal in appearance, and no traces of an obstructed vessel could be seen. Neither the arteries nor the veins were altered in appearance. The macula presented a cherry red appearance, but no hæmorrhages of the retina were visible. The next day vision was 0.6, on the 24th 0.8, and on the 26th, four days after the attack, central vision was perfect. The field of vision gradually widened on both sides from below upward, and when last examined a few days ago, there was only a blank in the field directly upward. The œdema of the retina faded out in about a week, and the cherry red appearance in the macula in two weeks. Was this an embolism? probably not. Was it a spontaneous thrombosis according to Priestly Smith? Was it a thrombosis as is described by Michel of the third degree—a simple stasis? In this case the patient had been indulging in stimulants and tobacco freely for some months previous, and particularly so on the night before this attack occurred. Is there not a direct relationship between the engorgement between the cerebral and the retinal vessels and the œdema of the retina?

REPORT OF A CASE OF ZONULAR ATROPHY OF THE CHOROID.

Read in the Section of Ophthalmology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, June, 1892.

BY R. TILLEY, M.D.,

OF CHICAGO, ILL.

J. N. O., age 66 years. One of a family of two children. Father and mother lived to the age respectively of 63 and 81. No recognized defect in the eyes of father or mother. Father afflicted with a contraction of the subcutaneous fascia of palm of the hand, resulting in the condition known as Dupuytrien's fingers. Patient's brother, now dead, was afflicted in a similar way in the right hand, but only one finger was affected. Patient himself, who was for a great part of his life an English sailor, has marked, severe contraction of several fingers, involving both hands, clearly referable to similar condition of the subcutaneous fascia. He has now and has had for ten years at least, a remarkable intermittent pulse; remarkable in that there is a decided regularity to the irregularity. I took a tracing of it, but finding that it really failed to give any accurate conception of it, I have not thought proper to produce it. Patient has a son-in-law, a physician, who writes me that he observed this irregularity ten years ago. In order to get as definite a view as possible of the condition of the heart I referred him to Dr. R. H. Babcock, who reported as follows:

CHICAGO, May 3, 1892.

Dear Doctor:—Please pardon the tardiness of my report concerning Mr. Owen, whom I examined last Friday. The irregularity of his pulse struck me at first as being an example of the pulsus trigeminus, but on more extended palpation, it was found to intermit at regular intervals. Sometimes there was an apparent intermission due to a pulse wave that was scarcely to be felt. I then auscultated the heart while feeling the pulse, radial, and it seemed to me that at times the heart contracted without forcing a pulse wave all the way to the wrist, but as to that I am not quite positive.

There is no evidence particularly of extended arteriosclerosis, although his age would render that condition probable in a measure at least. There is marked evidence of heart degeneration. He says he sometimes has pain and stiffness in the joint of the right big toe, but without enlargement. He suffers also with great flatulent indigestion, which has been the case about ten years. There is such an absence of symptoms referable to the heart, that it seems to me his intermittency of pulse must be due largely to reflex causes. Very sincerely yours,

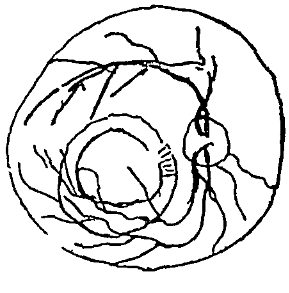
ROBERT H. BABCOCK, M.D.

He suffered some ten years ago from an excruciating pain —"a boring pain" which, as far as I can make out was referred either to the heart or stomach. The doctor in attendance, Dr. Heydock, now dead, confessed that he could not satisfy himself as to the cause of the pain. He suffers at times now from some pain in the lower part of the back, extending downwards in the region of the sciatic nerves. He has had two children and only two; one only is living. There is no evidence of lues that I can elicit. There is no evidence of renal affection.

The external appearance of both eyes is normal, with the exception of a certain amount of chronic conjunctivitis. No adhesion of the irides, but the pupils do not dilate under mydriatics *ad maximum*.

In both eyes there is incipient capsular cataract, both most pronounced in the infero-internal quadrants—the best eye, the left, giving the most evidence of cataract.

The curious feature which has induced me to report the case is the peculiar form which the degeneration of the choroid of the right eye has assumed. I have called it zonular atrophy of the choroid. The peculiar band of atrophy does not occupy exactly the position which it should occupy relative to the poles of the eyes to fully justify the appellation. It forms, however, a distinct band, the relative position of which will be best understood by the accompanying diagram. You will see that the band is represented a good deal wider at the bottom than at the top, and the part near the optic disc possesses quite an amount of choroidal tissue which clearly supplies the blood to the island of relatively normal tissue. In the lower part the sclera is plainly visible, traversed only by some retinal vessels. The edges of the pathological tissue are clear cut, not black, in places brownish, and the area embraces the macula.



After considerable patient observation I can detect no visible difference between the choroidal tissue forming the island and the general choroidal tissue. When the communicating bridges disappear the whole island of apparently normal tissue will disappear, and leave the sclera exposed throughout the whole area similar to the wider area below.

The sensations which he complains of are floating objects, a dark brown area in the centre and upper part of the field of vision—both of them sketched out for me on a piece of paper—and a continual whirl of different colors before the eyes, most manifest in the affected eye and more troublesome in a bright light. The colors he compares to the colors of the flower, the sweet william. Whether the whirling sensation complained of also in the relatively healthy eye is referable or not to pathological changes in the right eye, I cannot determine. I suppose that if such a sensation is due to the disturbed circulation of the choroid, the sensation would be shared by both eyes. I will add, moreover, that a very small patch of pigment, quite black, has been observed in the lower part of the fundus of left eye, the region corresponding to the region of greatest atrophic development in the eye under consideration. It will be interesting to observe if that peculiar subjective sensation will disappear with the completion of the atrophy of the choroidal bands now uniting the island to the remaining choroidal tissue.

Whether that spot of pigment in the lower part of fundus of left eye is the commencement of a similar process in that eye, it is impossible to divine. I have had the case under observation now for about five months, and I can observe but little change.

NAPHTHALINE IN THE TREATMENT OF WHOOPING COUGH.—The treatment of whooping cough by means of naphthaline fumigation is recommended by Chavernac (in *Bull. Gen. de Ther.*). About half an ounce of the drug is, on one or more nights, made to burn in a suitable vessel in the sick room, the windows and doors being tightly closed. The cough at once moderates, the dyspnœa and other symptoms are favorably influenced, and the attack is soon brought to an end. Complications may contra-indicate the employment of the remedy. Those individuals suffering with pulmonary tuberculosis cannot bear the treatment.

SECTION ON NEUROLOGY AND MEDICAL JURISPRUDENCE.

Chairman, Dr. Harold N. Moyer, Chicago, Ill.
Secretary, Dr. Geo. R. Trowbridge, Danville, Pa.

The Section met in the hall of the Young Men's Christian Association, Detroit, at 3 P.M., June 7, 1892, and was called to order by the chairman.

In the absence of the secretary, Dr. Trowbridge, Dr. W. J. Herdman, of Ann Arbor, Mich., was elected secretary *pro tem.*

1. The first order of business was remarks by the chairman of the Section, Dr. Moyer.
2. Paper by Mr. Henry A. Chaney, with discussion.
3. Paper by Dr. Comegys, with discussion.
4. Paper by Dr. Hughes, with discussion.
5. Paper by Dr. Mills, with discussion.
6. Paper by Dr. Kiernan.
7. Paper by Dr. Chaddock, with discussion.
8. Papers by Drs. Rockwell and Fell, with joint discussion
9. Paper by Dr. Howell, with discussion (paper not received).
10. Paper by Dr. Sanger Brown, with discussion.
11. Papers by Drs. Bremer and Lydston, with discussion.
12. Paper by Dr. Fuller.
13. Paper by Dr. Manley, with discussion.
14. Papers by Drs. Crothers, Dewey and Talbot, with discussion.

The following papers read by title:

1. Paper by Dr. Moyer.
2. Paper by Dr. Wright.
3. Paper by Dr. Mason.
4. Paper by Dr. Norbury.

REMARKS BY THE CHAIRMAN.

BY HAROLD N. MOYER, M.D.,
OF CHICAGO.

Gentlemen: The address which I had prepared on the organization of the work of this Section is no longer suitable. I had outlined in that address what I conceived to be the best organization to the end that we should develop our own autonomy to some extent on the lines adopted by the Section on Ophthalmology. But the action of the Association this morning in creating an Executive Committee for the Sections, and giving it power to formulate some general rules for the conduct of the Association in the future, has made my address somewhat inappropriate; therefore, I will not deliver it, but instead will briefly refer to a few points of an historical nature.

It was many years since Dr. Ray instituted a section on insanity in the American Medical Association, which was continued for some years and did good work. For some reason that section was finally discontinued and its work was merged into the Section on the Practice of Medicine. Thus, for a number of years—at least, more than a dozen—there was no special section for the discussion of neurological subjects.

In 1884, Dr. Quimby, I think, introduced a resolution creating a Section on Medical Jurisprudence. The following year this Section was instituted, and the Section held its first meeting in Cincinnati. We had then some six papers on the program and about four or five members to listen to them.

The following year the scope of the Section was enlarged by the addition of neurology, and at the Nashville meeting we had a fair attendance and a few excellent papers. The next meeting at Washington showed renewed interest in the work of this Section, twenty-two papers were read, and the attendance was large. From these small beginnings the work has gradually developed until we present you to-day a program containing forty-one titles, many of them from the pens of the most eminent neurologists in this country.

I think we can congratulate ourselves on the success of the work of our Section; one of the youngest, it has shown a vitality and growth that has in some cases outstripped its elders. I feel that without making invidious distinctions that I can especially mention the enthusiastic work of Drs. Hughes, Kiernan, Crothers, and Evarts. It is due largely to the persistent work of these men that we have achieved such a signal success; with such a past we can confidently look forward to the near future when the meeting of this Section will show as good work as is done by any similar body in this country. (Applause.)

RESPONSIBILITY IN WILL-MAKING.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June 7, 1892.

BY HENRY A CHANEY,
OF DETROIT, MICH.
PROFESSOR OF MEDICAL JURISPRUDENCE, MICHIGAN COLLEGE OF MEDICINE AND SURGERY.

It is and has long been the all but universal rule that one must be of sound mind to make a will that will stand. It is so laid down in the statutes of nearly all the States. If this rule were rigidly observed, many more wills would be set aside than are. But the courts have greatly relaxed it, so that absolute soundness of mind is now by no means a condition to the making of valid bequests. The old English law was that a single foolish word would spoil a will, and so recent a chancellor as Lord Brougham decided that any degree of mental perversion would be fatal. But when Sir Alexander Cockburn came to the bench, he changed the whole current of the English law on that point. In the case of Banks *v.* Goodfellow, 5 Q. B. 549, he stated in the clearest and most positive way the then existing rule and the reasoning that supported it. The rule was, that any degree of mental unsoundness, however slight, and even though it exercised no influence on the will and was wholly unconnected with the disposition the testator made of his property, was fatal to the will. And the reason was that the mind, though it has various faculties, is one and indivisible; if it is disordered in any one of these faculties—if it labors under any delusion arising from such disorder, though its other faculties and functions remain undisturbed, it cannot be said to be sound; such a mind is *unsound*, and testamentary incapacity is the necessary consequence. By way of answer to this, Sir Alexander reviewed in an elaborate opinion the condition of British and Continental jurisprudence on this point, and found it either unsatisfactory or superficial. Turning, then, to the American decisions, and especially to certain New Jersey cases, he commended the good sense of the American law, and said in his own convincing fashion, that if it were conceded that the only legitimate ground for denying testamentary capacity to persons of unsound mind is their inability to take into account and give due effect to the considerations which ought to be present to the mind of a testator in making his will, and to influence his decision as to the disposal of his property, it follows that a degree or form of unsoundness which neither disturbs the exercise of the faculties necessary for such an act, nor is capable of influencing the result, ought not to take away the power of making a will, or place a person so circumstanced in a less advantageous position than others. And later English cases have been decided accordingly.

To get the full force of the Lord Chief Justice's reasoning, it should be stated that the Banks whose will was in question in this case had once been unquestionably insane—had been confined in a county asylum, and when discharged had remained subject to certain fixed delusions. He had long had a deep aversion to one Featherstone Alexander, and though the man had been dead for years, Banks still believed he continued to follow and molest him; the mention of his name threw him into violent excitement. He also believed himself to be molested by devils whom he thought visibly present. At the time he made his will he had been having a succession of epileptic fits. But on the other hand, he managed his own limited affairs and was careful of his money. Notwithstanding his antecedents, and in direct contravention to what had been the law of England as laid down by her judges, Chief Justice Cockburn held that his will was valid.

A short report of a few of the more important recent cases in this country, relating to testamentary capacity, may be of interest, and possibly of some service as at least a basis for further inquiry. Their net result, however, as matter of law, if summed up at the outset, is that the more recent rule already explained remains substantially unchanged, and, if anything, receives a more and more liberal interpretation, and that the courts seem less and less inclined to interfere with wills on the score of mental unsoundness.

Bannister v. Jackson, 45 N. J. Eq. 702.—In 1887 there died at the German Hospital in Newark one George M. Bannister, who had made a will three years before by which he left his wife $500 in addition to her dower right, and his daughter a like sum, which was not to be allowed to get into the hands of her husband. Her husband, by the way, had been dead for two years. Bannister left the rest of his estate, which was all personal and amounted to $12,000 or $14,000, to four brothers living in England. He had been for twelve years a chronic drunkard, who saw strange sights, whose hand trembled continuously and who when sober, was nervous, sleepless and irritable. He died of chronic alcoholism, and his widow and daughter resisted the probate of his will on the ground that his condition deprived him of testamentary capacity. The Prerogative Court, however, found from the testimony that he had managed to keep his business together and to sell it to good advantage, and that some time after his will was made he had been elected a director of the Mutual Building and Loan Association of Newark—an office he had previously held and resigned—and was considered by his fellow-directors a man of excellent judgment. At about the same time he hired out as foreman at fifteen dollars a week, and after lending his employer a thousand dollars upon security, he so managed as to become the owner of the business. As he was not drunk when he made the will, a majority of the court sustained it.

Clifton v. Clifton, 47 N. J. Eq. 227.—In 1887 Marian Passage, a New Jersey spinster about 83 years old, and who died within two years afterward, made a will by which she left the whole of her small property to a niece who had lived with her for thirty-five years, and who had been, as the old lady said, a daughter to her. A previous will, made in 1873, had so disposed of the property that a brother of this niece would have shared it equally with her. This brother tried to break the later will by a showing of testamentary incapacity, and to that end put in evidence that at about the time the old lady made it her memory had failed so that she would forget words and could not talk connectedly; that her table manners were revolting; that she played with a doll—which, by the way, he had brought to her; and that she was continually folding little rags and arranging them in her work basket. He also produced a negro servant of hers, whom he had previously employed, who swore that on one occasion Miss Passage asked what certain objects were that she saw from her window, across the street, and on being told they were men asked what men were. On the other hand, the lawyer who drew the will said that before drafting it he had talked with the testator a few minutes in order to satisfy himself as to her mental capacity; that she seemed infirm, but able to talk connectedly upon an important subject, and that she gave her instructions without difficulty or assistance. The Prerogative Court sustained the will, and cited near a score of cases in which the New Jersey courts had held that one might have capacity to make a will even though his memory was imperfect and greatly impaired by age or disease, and he might not be able to recollect the names, the persons or the families of those with whom he had been intimately acquainted, and even though he did childish things at times or talked disjointedly, flying abruptly from one subject to another, or asked idle questions and repeated those which had before been asked and answered.

White v. Starr, 47 N. J. Eq. 244.—In 1889 the Orphans' Court of Camden County, New Jersey, rejected the will of Jesse W. Starr, which had been made five years before when the testator was seventy-five years old. Mr. Starr, who had begun life as a mechanic, had created at Camden one of the largest and most successful iron working establishments in the United States—a concern that cost a million dollars but in the hard times following the panic of 1873 became bankrupt for nearly that amount. An attempt was then made to run these works for the benefit of creditors, but incompetent management by his sons brought the experiment to a disastrous end. He had a son-in-law, however, named White, who did much to relieve his embarrassments, and who furnished him with a home in the last years of his life. The will in question was the last of three, all of which were well adapted to the changing conditions of his fortunes, but the last, after referring to the large advances he had made to his sons, left both of them a nominal sum only, and bestowed the greater part of his remaining property on his daughter, Mrs. White, who had never had any considerable sum of money from him. And her husband was made sole executor. Mr. Starr's sons and another son-in-law contested the will, and made a strong showing of mental disorder. He had once called on a druggist to have an old toothbrush refurnished with bristles; he had made a practice of buying candy, distributing it among children, and offering it to grown folks; he had once got his granddaughter to play the piano, and as she did so he danced in the presence of guests; he would make aimless calls upon his friends, look often at his watch while with them, shake hands with them repeatedly, and reiterate the expression of his pleasure at seeing them; he would ride constantly upon the railroad—so constantly that the president of the company sent him a free pass—but he would restlessly shift his seat while on the train, often stand up as it approached a station, and on one occasion, when he went into a smoking car, he shouted "no smoking, no smoking," several times, used insulting language to one of the smokers, and then, sitting down in front of him he kept mumbling to himself the most insulting of the expressions he had used. It was the commonest of things for him to fail to recognize his acquaintances even after he had been told their names; he had been known to ask where he was when only three blocks from home; once, after waiting a few minutes in a barber shop, he arose, stroking his chin as if he had been shaved, and handed the barber his quarter; when the barber said he hadn't shaved him yet, he put the money in his pocket, mumbled and went out; and he used often to tell this barber about a coat which he had had made in Ireland, and which he called his Irish coat. But on the other hand, there were many gentlemen of the highest standing who certified to his intelligent conversation with them, and some of them had heard reports of his mental failure, and were on the lookout for evidences of it. One of these gentlemen had told Mr. White that the impression was getting abroad that Mr. Starr's mind was affected, and had advised him to have the question laid at rest somehow. White laughed, but afterwards quietly invited two physicians, one of whom kept a private asylum, and the other was consultant on insanity at the Philadelphia Hospital, to visit his father-in-law. The first reported that if he had never heard of Mr. Starr, he would never have thought for a moment that there was anything mentally wrong with him; he might have thought from his way of eating that he was slightly peculiar and eccentric, but nothing more. His opinion was that his mind was sound and his memory good, but that like most old people, he could not stand such a prolonged mental strain as he could have stood earlier in life. The other physician said that the impression he received was that Mr. Starr was somewhat enfeebled physically, probably by age, and that his mind acted slowly, but intelligently; he saw nothing to indicate that he was not competent to make a will. The Prerogative Court concluded that while all the evidence could not be reconciled, that which was free from prejudice and interest showed a case where second childhood was asserting itself, and where there was an occasional and transitory loss of complete control of his mental power, but that the testator was usually in possession of his faculties. "It cannot be said"—remarked the judge—"that such a man does not possess capacity to make a will." The decree of the Orphans' Court accordingly was reversed.

Spratt v. Spratt, 51 N. W. Rep. 627.—A case for which there was as little foundation as one can well imagine, was that of Albert Spratt, of Jackson County, Michigan, an old bachelor farmer who died at seventy-one of pneumonia, leaving an estate worth nearly one hundred and twenty-five thousand dollars, which he willed to a score or so of relatives. If he had died without a will the whole would have gone to two sisters and the children of three brothers, and the sisters would have taken twenty-five thousand dollars each. It was an object of course, to break his will, and the usual process of attacking his testamentary capacity was resorted to. The testimony mainly relied on to accomplish this, was that of the physician who attended him in his last illness, which took place in November, 1886. He had warned Spratt that he would probably not get well, and had asked him if there was any business he wanted to attend to. "Why, yes," said the farmer, "I want to make my will," and that evening he directed a nephew to go next morning for a justice of the peace, whom he knew, to draw it. The will was drawn accordingly next day, or rather was dictated by the testator and written down by the justice. The doctor was present part of the time, and occasionally administered doses of whiskey, quinine and carbonate of ammonia to his patient, who sat up most of the time, leaning his head upon the back of another chair. The doctor was napping, off and on, in an adjoining room, and did not know that a will was being drawn until it was nearly finished. He talked with his patient, of course, and says that most of the time he thought him sane and rational, but flighty some of the time. His flightiness, so far as appears, seems to have consisted in his muttering a good deal to himself—in his wanting to pull on his boots and walk out doors, saying that he thought it would do him good—and especially in his upbraiding the doctor for not giving him a longer warning, and complaining to a neighbor that the doctor had promised him three days' notice. It may be added, by the way, that he did in fact live four days, But the Supreme Court said it was difficult to see anything in this. The doctor farther testified that he was of opinion that the day the will was made the farmer's physical condition in consequence of his disease, was such that he could not have carried any lengthy statement of facts in his mind. But the Supreme Court point out that he did in fact, unaided, dictate consecutively, bequests to many relations, near and remote, and they ask what, under the circumstances, an opinion is worth that he couldn't do what he certainly did do. Of course they sustained the will.

Among other recent cases of this class are two of small importance except as they involve the question of the influence of a dying man's physical condition upon the working of his mind. One of these was an Iowa case in which the will of Michael Duggan (*Duggan vs. McBreen, 43 N. W. Rep. 547*) was contested on the ground that when he made it his mental powers must have been greatly impaired because he was suffering from "a kind of diabetes" which in its last stages tended to produce coma, and was aggravated by fistula and gravel, all of which presumably exhausted his system, especially as he was a man of 67. The Supreme Court said that none of these facts, taken alone, would establish testamentary incapacity, but thought that their weight, when taken together, was a question for a jury. The other was a Minnesota case (*Hammond vs. Dike, 44 N. W. Rep. 61*), in which a codicil executed the evening before his death by a man 75 years old, was disputed because most of the time during his final illness, which lasted less than two days, he was apparently unconscious, and the illness, which began with severe pain, soon brought on great bodily weakness and prostration. Some medical witnesses thought his unconsciousness was coma, caused by uræmic poisoning due to kidney disease. Medical experts differed on the trial as to the measure of consciousness and mental capacity which he may have had or which would be compatible with his physical condition. One of them said it was not unusual in uræmic conditions for patients to arouse to a sound mental condition. A jury sustained the codicil: the Supreme Court sent the case back for additional evidence and declined to express any opinion as to the sufficiency of the showing made.

Another class of capacity cases, on which, it seems to me, the law needs more light, and will be glad to get it from medicine, is that in which the disturbing element is spiritualism. The attitude of the Courts on this question is that while so-called spiritual manifestations are, no doubt, as vice-chancellor Gifford called them, "mischievous nonsense" (*Lyon vs. Home, L. R. 6 Eq., 655*), still it cannot be said that a belief in them is such an insane delusion as will defeat testamentary capacity and invalidate a will. They can as yet be induced to go no further than to say that such a belief may result in the exercise of an "undue influence." The celebrated Judge Gresham had a case before him in 1883, in which John Thompson, aged 74, had left all his property to Mrs. Amanda Hawks, who professed to be a medium, to the exclusion of his only son and heir. (*Thompson v. Hawks, 14 Fed. Rep. 902.*) Thompson had shown signs of aberration, and there was insanity among his relations. He began to talk among his acquaintances about sending messages to his deceased wives, and receiving them from them. When he visited Mrs. Hawks he carried with him a little basket of delicacies for these wives, and told some of the witnesses that she would forward them. He told several people that he had been directed by the spirits of his wives, through Mrs. Hawks, to dispose of his property; they had advised him that it was necessary for his "development" as a medium and had enjoined him to "do well" by Mrs. Hawks. The judge set the will aside and said: "It is useless to discuss here the proposition as to whether or not a spiritualist can make a valid will, or as to whether or not a man who has a monomania on one subject is capable for the general transaction of business which does not concern that subject. The testator was in a weakened state of mind when he came under the influence of a spirit medium. He embraced spiritualism as practiced by the spirit medium, and instead of merely believing in it as an abstract proposition, he became possessed by it and suffered it to dominate his life and override every other consideration. His belief in it was artfully used by the spirit medium—the only one it appeared, whom he ever consulted—to alienate him from his only son and child, and to get his property."

Middleditch v. Williams, 45 N. J. Eq. 726.—On the other hand when William H. Livingstone, who died at Newark in February 1888, and whose family consisted of his little daughter Lillian, seven or eight years old, and his mother-in-law Mrs. Marie C. Williams, he left every thing by his will to the mother-in-law, to go at her death to her son, Wm. P. Williams, but to be held in trust for Lillian until she should marry or reach the age of 25. If she should die before the mother-in-law the latter should take the property; if both died before Wm. P. Williams, he should have it all. No provision at all was made for Lillian's children if she should have any. An effort was made to set aside this will on the ground that Livingstone was incompetent to make it, his mind being occupied by the insane delusion of spiritualism. He had told several persons that the spirit of his wife had told him through a medium in 46th street, New York, to provide for her mother; to give *all* the property to her and do it in such a way that none of his own relatives could get it from her. The judge thought this was hardly evidence of an insane delusion. It seems that when Livingstone first attended a séance he was skeptical, but when the spirits inscribed upon a brooch worn by his mother-in-law, there present, the word "Dickie," which was a pet name of his wife, and made it blaze out in letters bright as diamonds—then he believed. The judge held that he had been convinced by evidence—such as it was—and his delusion was therefore at most an error of judgment.

In this case the judge's illustration of an insane delusion was by supposing one, without evidence of any kind, to imagine something to exist, which did not in fact exist, and which no rational person would, in the absence of evidence believe to exist; and he said the only way in which such irrational belief could be accounted for was that it was the product of mental disorder.

This definition was with great technical skill turned upon those who sought in the Ward will case, here, seventeen years ago, to identify a belief in spiritualism with insane delusion. Captain Eber B. Ward had been one of the most considerable capitalists in the northwest, and was a man of extraordinary force, who carried on successfully a vast complication of diverse business interests. He had died in the street of an apoplectic stroke, and some of his children wished to set aside his will in which he had provided more liberally for his second wife and her children than for them. Ward had dabbled extensively in spiritualism, frequently visited a local medium, had consulted with others, professed to imagine himself advised by a spirit whom he designated as "Cabbage John," and on one occasion, on being told by a medium that the spirit of ex-senator Jacob M. Howard was present, he had offered to shake hands with the ghost and had held some conversation with it. The accomplished Dr. Alonzo B. Palmer was examined as an expert in insanity. The examination was conducted by the late Theodore Romeyn, one of the most astute lawyers at the Detroit bar, but the cross-examination was in the hands of an equally keen lawyer, the late D. Darwin Hughes.

Mr. Romeyn asked the question: "If a man fancies he sees the spirit of a deceased acquaintance standing before him, what should you think was the condition of his mind?"

Here Mr. Hughes interposed: "I object to that," said he, "unless the gentleman complete the hypothesis by the supposition that the spirit is not really there. Otherwise there is no delusion."

The judge said "I think you will have to complete the hypothesis in that way, Mr. Romeyn."

But Mr. Romeyn, instead of completing the hypothesis, argued his right to ask the question, unless it were assumed, as a matter of law, that there were such things as spirits, and he did not think such an assumption could be made.

Mr. Hughes retorted that the field of superstitious belief could not be invaded. He could put any number of witnesses on the stand from the time of the Saviour to this day, to swear that all who believed in the miracles of the Saviour were deluded.

Under the judge's ruling, however, the hypothesis had to be completed as Mr. Hughes had suggested, and the witness naturally answered "Of course that would be a delusion."

"Certainly, it would," said the crafty Mr. Hughes. "*That's giving the witness the definition of a delusion, and then asking him if it is a delusion.*"

The foregoing cases have been for the most part cases in which wills were sustained through thick and thin. By way of instructive contrast may be given an Illinois case (*American Bible Society v. Prince*, *115 Ill., 624*) where what may be called a religious delusion upset a will very speedily. Whether it would have been sustained if the testator had been a spiritualist is another matter. Isaac Foreman died in 1878 at the age of seventy-four owning a hundred thousand dollars worth of property, and leaving a widow and a married daughter, the latter being destitute. His will gave his widow a life-estate in the homestead, his household and kitchen furniture and the farm, stock and tools. Everything else was to be sold and two thousand dollars invested for the daughter and her children; of all the rest two-thirds was to go to the American Bible Society and one-third to the Missionary Society of the Methodist Church. A jury found his will invalid, and the Supreme Court sustained their conclusion, which they said they were bound to do, if there were any evidence to support it. They thought there was such evidence. Foreman was admitted to have business capacity, equal if not superior to that of the average of mankind, owning and constantly increasing, as he did, a large property which needed good judgment, prudence and diligence for its successful management. But he had said in class meeting, while speaking of his children and family, that he was afraid of his life; he had also said he was harassed all the time for money by agents for churches, orphan asylums, colleges and schools and bible and missionary societies; that his mind had been injured by their solicitations, their argument being that his future happiness depended on his liberality; and finally, that he had said he intended to place his money where it would roll up and roll up and roll up until the day of judgment to work for old Isaac Foreman. This daughter had been his favorite child, yet he dressed her poorly, gave her but little education, kept her out of company and worked her as a field hand. The Court say they "find it difficult to believe that an egotism which is so extravagant and distorted that it regards only self in this life, and in the life to come, that wholly disregards and ignores the natural claims of a needy child, known to be worthy and dutiful and loving, and the affections ordinarily implanted in the heart for such a child, can consist with a mind entirely free of disease causing morbid delusion."

These are recent specimens of American jurisprudence bearing upon responsibility in will-making. They involve the effects upon the mind of gross intemperance, senile dementia, disease and approaching dissolution and the illusions of credulity and fanaticism. It will hardly be expected that one who can discuss this subject, if at all, from the standpoint of the law alone, can add any thing to the medical learning upon it. But a lawyer can ask questions which a doctor cannot answer. At least it is to be feared so. If the doctor can and will answer them it will be a distinct gain to both professions.

We would like, then, in the first place, with respect to insane delusions, a definition of them that shall not come out at the same hole it went in at.

We would like to know—and this is a bold query—whether, notwithstanding the law, spiritualism is not in fact an insane delusion; and if so, how potent it may be in the destruction of testamentary capacity.

We would like to know whether dementia, short of absolute idiocy, may amount to such complete and comprehensive unsoundness of mind as conclusively to invalidate a will whatever the character of its provisions. Indeed, can a person so demented have or express any will at all; and may not the will of any person less affected be valid?

We would like to know whether coma implies unsoundness of mind any more than sleep; and if not, how then can coma cut any figure in the invalidation of wills.

And we would like to know whether, in spite of the classical maxim, there is any such necessary connection between a sane mind and a healthy body that any enfeebled, disordered or diseased condition of the latter—short of delirium—implies as matter or fact or law a technically "unsound" condition of the former.

Discussion.

Dr. J. G. Kiernan, of Chicago, Ill., was of the opinion that the paper propounded a good many difficult conundrums. With regard to the question of definition, even the law does not profess to give any definition other than a relative one. In judging, therefore, what is an insane delusion, we must not judge so much by the character of the delusion as the state of the man. For example, a belief in witchcraft at a certain phase of our civilization was fully in consonance with the belief of the majority of the people in a normal state of mind at that period. To believe in witchcraft at a certain period was a normal thing. When educated men trained in the sciences of to-day believe in witchcraft, there is a natural question, is not such a man insane? The vast preponderance of evidence in such a case would be in favor of insanity. To illustrate: I had under my charge in an insane hospital, a man who had been a member of our own profession, who had received an academic education, who had lectured in a college on botany and chemistry. That man was found on one occasion to keep at a distance from a certain patient in the ward. He was asked why he did it. He said the man had bewitched him. Before this, this man, who was a much demented individual, had inflicted on this physician (so he believed) all sorts of tortures by electricity. He was shown that such use of electricity was impossible, whereupon he abandoned the belief so far as electricity was concerned, but to account for his feeling, he adopted the hypothesis of witchcraft. In these cases we must consider the surroundings of the men.

With regard to spiritualism, I think the same test can be applied. It seems to me in the case cited where a man left his money to a medium, and the court held that the man was mentally impaired, that it was right, because he was unable to separate from that medium the phenomena with which he was surrounded, but this was an evidence of undue influence.

With regard to lucid intervals, one case occurred in England, and one or two in the United States, in which an insane woman with restraint of some sort on her limbs, was able to dictate a will, and the court held that the logical character of the will proved a lucid interval.

A person in a state of coma would be incapacitated to make a will; but there are many conditions which resemble coma in which a man can recover perfectly. The question comes up, not what is an insane delusion or an incapacitation of testamentary capacity generally, but what is it in a particular case? Like a number of alienists, I believe there exists a certain class of the insane whose wills should be held valid so long as there is no evidence that the delusion affected the testator's mind. It is a little in the direction of the spirit of the common law. In civil affairs the insane are apt to keep along the ordinary routine of life; in criminal affairs their insanity is most often apparent.

Dr. T. D. Crothers, Hartford, Conn.:—In my experience the question of validity of a will depends upon the soundness and reasonableness of the instrument. I have seen instances where a person in an insane condition made a will which was admitted as a rational instrument without question, because the assignment of the property was correct according to reasonable and rational grounds. To what degree is the instrument rational, reasonable? An instrument is sound when there has been an even disposition of the property. If the property is badly arranged, badly disposed of, the question of soundness of mind comes up, and it may not have been mentioned before during the lifetime of the individual, yet the character of the will will indicate at once a mental defect.

A case was tried recently in New York in which a man's soundness had been previously unquestionable. He conducted his business in a most excellent, sane way. At his death a will was found, disposing of his property in an irrational way, and because of that, the question of soundness was raised and some facts worked up, until it was evident that the man was a lunatic. He had concealed his delusions, and his insanity was unknown.

In another case, in which a will was made by a man who was notoriously insane so far as religious belief was concerned, not a question was raised in court as to the soundness of the instrument and the apparent rationality in which the property was disposed of.

Dr. C. K. Mills, Philadelphia, Pa.:—The questions asked by the gentleman who read the paper (Mr. Chaney) are difficult to answer in a satisfactory way. Dr. Kiernan, in his remarks, struck as nearly as possible the solution with reference to delusional cases, when he said that we must not consider so much the conditions of the delusions as the state of the patient's mind. This is the key to the matter. Here appears a great difficulty with judges and lawyers. To illustrate with reference to the delusions, it is perfectly clear to me, as it is, I have no doubt, to others, that a man may have a delusion relating to certain facts; that he may make statements in support of his delusion, which may be true, and yet the man's mind may be in a delusional state. A man may have the delusion of marital infidelity; he may have the delusion of conspiracy or persecution in any of its forms; his wife may be unfaithful to him, others may conspire to injure him in the way he thinks, yet after all it may be a delusion so far as his mind is concerned. We have to study both the facts and the mental state of the alleged lunatic. A judge once asked me when I made a statement like this, "Do you mean to tell me that a man can have a delusion of marital infidelity, and that man's wife be unfaithful to him at the same time in the way he thinks?" I said "Yes." A man may not have any knowledge of the facts of the case about which he is delusional.

Mr. Chaney asked "whether dementia, short of absolute idiocy, may amount to such complete and comprehensive unsoundness of mind as conclusively to invalidate a will whatever the character of its provisions?" A question of that kind shows the impossibility of a lawyer, who is not posted in medical matters, comprehending the subject. Dementia, of course, is a relative matter, and each case of dementia must be studied for itself. Insanity is relative; dementia is relative. We may have 30 or 50 per cent. of dementia in a case; each case must be studied by itself.

Now as to coma, true coma precludes the possibility of a man having testamentary capacity at that time; yet I have seen in my wards at the Philadelphia Hospital a patient stricken with apoplexy, and practically comatose for all purposes—but the patient rallied every five or ten hours, had lucid intervals, and then sank again into a comatose state. He finally died, and on making a post-mortem examination I found evidences of three stages, or separate attacks, of hæmorrhage in the brain. Such a case once came before the Philadelphia courts.

The points brought out by Dr. Crothers are well taken, yet I do not think the instrument itself should in every case determine the validity of the will. Take the case of a delusional lunatic. We had a man in Philadelphia who was on trial as to his sanity some years ago. The case was a famous one. Seven physicians, men of more or less eminence, testified as to his insanity; but a veterinary surgeon and the jury declared him to be sane. He clearly had delusions, but he had conducted his civil affairs properly, and he was worth perhaps $50,000 or more. He might have made a will perfect in its terms, which would have had on its face every appearance of rationality, yet that will might have been one which was influenced by the delusional state of his mind. Take again senile dementia. An old man or woman—and I have seen a number of such cases—has profound delusions of penury, and turns against sons and daughters who have taken the best of care of him or her. A will perfectly rational to all appearances may be made, and yet it may be the outcome of a delusional mind.

Dr. C. B. Burr, Pontiac, Mich.:—It has seemed to me for many years that the pendulum has swung too far in the direction of latitude in will-making. There are those states which appear in connection with senile dementia, for example, in which perversions of feeling display themselves, but where there is no lack of knowledge as to the terms of a will, or the effect of any of its provisions. A person suffering from impairment of mind of this nature is still considered capable of making a will, although manifestly the perversion of feeling, not amounting to fixed delusions, may have a strong influence in determining the character of the instrument. Such cases as these, as well as others with fixed delusions, should be weighed carefully by the courts in the determination of the question of testamentary capacity. The legal theory as to the reason for the supervision of wills by the courts is, I apprehend, that through this supervision, injustice to dependent relatives may be prevented. If this idea is correct, it seems to me that all these matters should be taken into consideration, for it is in just this class of cases—cases of senile dementia and dementia after paralysis, with strong perversions of feeling, but without delusions, that injustice is most apt to arise. Cases of this nature are most perplexing, alike to the courts, juries, attorneys and experts, and should be thoroughly gone into.

Dr. H. N. Moyer, Chicago, Ill.:—I will attempt to answer Mr. Chaney's questions in a general way. As I understand it, all lawyers would like a foot rule which will measure 12 inches. As a matter of fact, the expert, when he examines these facts, has a foot rule that is 9 inches long in some cases and in others it measures 15 inches; in other words, he examines the facts in relation to their surroundings and by the character of the individual, the time and place. Dr. Kiernan has reflected that idea perfectly.

I wish to mention an instance of a lawyer who is unquestionably insane. He has been tried half a dozen times. He came into my office and asked me to examine him and testify as to his sanity on the following day. This lawyer I have known for years; we grew up together and attended the same school. He called me by my given name, and said, after a conversation extending over nearly an hour, "Do you see anything insane about me?" I replied, "I see no marks of insanity as far as this conversation goes: nevertheless I believe you are insane." He said, "How do you come to that conclusion?" I answered, "Frank, your cigar has gone out at least 20 times in this conversation; you have used about 20 matches to relight it, and they are all strewn about the carpet." This showed a heedlessness amounting to actual disease. In a man who had been brought up in the best of circumstances and amid refined surroundings, it argued an absolute degree of mental aberration. Suppose the case was taken into court, the lawyer might ask, "Doctor, is every man who throws burnt matches on the floor insane?" The foot rule in this case does not measure 12 inches. A variable standard is set up that judges the man by himself, his surroundings, education, time and place. What is an insane act at one time and under certain circumstances may under a different condition be compatible with perfect sanity.

Dr. John Morris, of Baltimore, Maryland, said his observation and experience had been that persons with senile dementia were liable to be unduly influenced by the surroundings in the matter of making wills. He had never seen a man that suffered from senile dementia strong at any time. He, however, consented to witness wills made by such patients, first taking the precaution to ascertain whether the wills were equitable and impartial. Dementia has many phases and degrees and frequently testamentary power is not totally impaired. Memory of all the functions is the most sensibly affected in senile dementia.

Dr. W. J. Herdman, Ann Arbor, Mich.:—In regard to the question under discussion, I wish to say it is an extremely vital matter. Mr. Chaney, who is a lawyer of experience, one who has been the Supreme Court Reporter of Michigan for a number of years, comes before this body, reviewing cases that have actually occurred in his own experience. asking us certain vital questions. We know that the lawyer and the physician on the witness-stand have long been at variance in matters of definition; they have both long desired to get at the truth. The lawyer asks the physician to define certain terms; to explain certain conditions, that in this way certain misunderstandings may be cleared up. Would it not be profitable for us in our line of work to appoint a committee to answer the questions that have been asked?

The Chairman:—Yes, if you will put your remarks in the form of a motion.

Dr. Herdman:—I therefore move, Mr. Chairman, that a committee of three be appointed by the Chair to take the questions propounded by Mr. Chaney under consideration, to report at *the next meeting*.

Seconded and carried.

A HEALTHY BRAIN IS NECESSARY TO A FREE WILL.

Read before the Section of Neurology and Medical Jurisprudence at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY C. G. COMEGYS, M.D.,
OF CINCINNATI, O.

The essential element in the human mind and what distinguishes each self from every other one. and by which our capacity for independent action exists —is the will. In mere bodily organization there is great uniformity, but this marvelous machinery does not constitute self, that directs and moves the organized frame. No more can the organs of sense through which we gain a knowledge of the materials and forces of nature, constitute our personality; nor does the mass of ideas and conceptions, the intuitive consciousness, the perceptions and logical forms, which are so similar in the common mind, involve the element which makes each human being distinct in himself from humanity at large. The essential fact in human consciousness; that which expresses spontaneity, power and ability for independent action is the volitional or regulative faculty. Without this magnificent principle all of the phenomena of mind would be ranked but as so many links in the chain of cause and effect which are exhibited in the universal operations of nature. Men would then be *mere things*—impersonal and irresponsible.

It is the activity, therefore, of this faculty that regulates our mental nature and our independent life. It is, indeed, intuitive; nevertheless, needs to be educated; it must be free in order to govern the lives of men.

The brain is the material basis of the mind, and is subject to all the physiological and pathological laws of other viscera; it has a great range of capacity as an organ; it needs a simple supply of blood for mere nutritive changes, but a much greater and momentary one when supporting *mental actions*. The vital chemistry must no where have freer play than here. It must rest, too; it becomes fatigued by ordinary and unexciting uses; but inordinately employed for long periods the balance of nutrition becomes disturbed; it wears excessively, its organic tone is lowered, and it loses ability for normal manifestations of mind.

The mind is builded by the gradual formation of ideas, the materials of which are derived through the senses, but are shaped into concepts by an innate faculty. The accumulation and retention of these form the raw materials of our intelligence. These factors, great or small, are stored away in associated forms and constitute our judgments of things *more* or less compound and complex. They are inseparably connected with our emotions, and moral and religious *sentiments* which constantly guide us in the discharge of our duties. A *man in* a controlling position should be able to employ all these resources calmly and sagaciously. His capacity for sound judgment and self-possession rests upon his intellectual possessions and the due restraint of his affective nature. Now, this due exercise of mind for our self direction depends upon the integrity of that dominant faculty which we call—the will.

Under this autonomy we possess powers for generalization, or abstraction of our conceptual stores; but if this master faculty be in abeyance, which it is, under conditions of functional or organic lesion of its material basis, our self possession is lost, and we become creatures of mere impulse—may I not say mere automata! The fine powers for analysis or synthesis are shattered, and what remains of mind is a mere exhibition of associations of ideas. The treasures of knowledge are still held, but no longer coherent and under discipline; like a ship under sail without a rudder, backing and filling, a mere drift; or an army without an adequate commander to direct its march or its battles.

This supreme mental force is no "transcendental entity" to be considered *apart from physical existence*, but may be said to be the correlative of the totality of the organic power of the brain. It is, therefore, only a well rested, well nourished and properly exercised brain that can display the freedom of this magnificent endowment of man. Thus it is, that psychology comes under the autonomy of the medical profession. The progress of physiology and pathology have shed immense light on the relations of the brain and the mind. From a remote period the brain has been known as the center of sensation and motion, but only within a few years have they been definitely located in the cerebral mass; and the specialization of areas in relation to their functions is now so well known, and their coördination for the *execution of instinctive and acquired movements*, that we can put our fingers on the exact regions where exists our capacity to think—the area where sensations are shaped into concepts—where ideas are symbolized in language—where memory holds its seat, and the imagination displays its marvellous powers. All the apparatus of our organic life—the organs of respiration, digestion, circulation, excretion and the great neuro-muscular systems, are merely to sustain and develop a definite region of the periphery of the brain, which can be covered by two hands. This is the realm of consciousness—the plane where spirit greets matter and the healthy life which enables a man to say "I know that I know; I feel that I feel; I think that I think;" it is where the human consciousness equipoises the cosmos. Gravitation is instantaneous in its action; consciousness just as rapidly reaches from the center to the circumference of the universe. Who but the physician has the right to supervise this dread region? Closer than the minister of religion, or the ties of blood, he stands the guardian of its illimitable faculties.

Through physiological research psychology has been lifted above the misty, subtle reasoning of the schoolmen into the light of a new day, and is now comprehended as never before. Metaphysics is no longer a jugglery with words and phrases, but is a *function of consciousness* only existing in a healthy brain; it is the *purest* and highest expression of reason, and cannot be displayed when the brain is functionally or organically unsound; it is a psychological systemization of ideas under the regulative faculty—the will—whereby the intuitional phenomena of thought, and the phenomena derived through the senses from external objects—the ideal and the real—the subjective and the objective—are brought into accord, and the consciousness is freed from baleful illusions, hallucinations and delusions. The imperfect state of consciousness in unsound sleep wherein ideas flow freely, regulated only by the law of association, represents an abeyance of the metaphysical faculty. We are led everywhere by the most absurd, grotesque, or fearful ideation without self-control, until further aroused and the spell is broken. There is no metaphysics in dreams.

The due development and direction of brain life, appertains to hygiene and sanitation. The manner of living, therefore, is of the first importance in order to obtain a healthy brain structure. This relates to air, clothing, food, exercise, employment and sleep. Whatever impairs any one of the great organs will, sooner or later, involve the health of the brain.

While the mental power of a race, or of an individual may be lowered to almost a brute state by exposure in inclement seasons, with inadequate clothing, poor food and bad air; on the other hand softness and needless indulgence, frivolity and luxury, lead to effeminacy. Children should be the offspring of healthy parents and be reared on plain substantial food; and, at the same time, the means of abundant and attractive exercise in the open air should be afforded. Instead of sleeping in heated rooms, luxuriously furnished, they should be without fire except in quite cold seasons, and be free from the decorative garniture of our fashionable people; and the hours of sleep should be ample and regular. Physical hardihood will thus be secured and the material basis of a strong mental and moral character be laid down. But the future character of an individual thus endowed with physical health will depend largely on ancestral conditions and the moral, religious and intellectual training which he receives.

We should always make a distinction between *impulse* and *will*. From the invariable manner of accumulation and association of the mass of ideas which constitute intelligence; over and above the immense number of actions that are normally automatic, there are constantly seen those which are the result of mere impulse, therefore involuntary, and not in any strict sense those which are willed or voluntary.

The impulsive and involuntary ones, in the sense I mean, are those which a sound will should be able to restrain. These impulsive actions, morally speaking, are the dangerous ones in our lives; for though they are so often good and commendable; yet they are constantly liable to be wrong. To restrain these and subrogate them completely to the will should be an aim in education.

The will can originate nothing, it can only take of the ideas which we possess and coördinate and direct them. It is by the will, I repeat, that we analyze and compound our notions, calmly reflect on our mental stores, and make such selection of them, and give such a direction to our thoughts as subserve our purposes in investigation, reasoning, and a final judgment on any given occasion. By our will we direct our way; by our impulses we are led, and too often driven. By early, constant, well directed training, more especially by inculcating habits of strict obedience to authority, whether relating to superiors, to sound precept, and the restraint of emotional impulses, the supremacy of will may be firmly established: and this is made more certain by the fact that the material basis of the mental and moral nature grows to conditions under which it is continually exercised.

The domination of the will is indispensable in concentrated thought: the control of the sensibilities is equally important; for unless feeling, appetite, desire are under government, our character is too unstable for the fulfillment of our responsibilities in society. Reason, reflection and judgment are all frequently overcome by the suggestions of appetite and passion; unless a strong rein is held by the will over the affective faculties.

There are mild and apparently innocent mental indulgences which exert, nevertheless, bad influences upon character. I refer to reverie—day dreaming—a species of mental intoxication, in which the mind is abandoned to drifting under the influence of mere association of ideas. There is no will in exercise; the imagination governs thought, and this sort of sublimated egotism, gives so much pleasurable cerebral excitement that, unless resisted, establishes at length a species of mental constitution akin to insanity. Every physician meets with cases where this pernicious mental habit involves, more or less, the reasonable actions in the individual. Habitual indulgence in mild reverie has a tendency to dementia; "day-dreaming" (castle building) attended with excitement as it often is, especially when related to great expectations, tends to a "delirium of greatness."

More attention should be given to this subject. It is to be hoped that physicians will study carefully its evil tendencies. Teachers, too, must awake to a consideration of its deleterious effects upon a pupil's mind. It is bad enough to be subject to this dream life when we are in unsound sleep; but every one should be warned, when awake, to keep the will, and not the imagination, at the helm for the voyage of the day.

To "keep cool" under exciting circumstances, to keep silence under great provocation, form great factors in magnanimous men; all of which depend so much upon the culture of the will.

More important still, is the use of the will, and not the memory, merely, in the exercises of schools and colleges. It is undeniable that the method of teaching in American schools has been grounded too largely on exertions of the memory in acquiring tasks. Lessons have been memorized, and not acquired by effort of the understanding; hence, they are not well retained and furnish a poor basis for wide intellectual culture. A lesson cannot be understood by an act of the memory. Severe efforts at memorizing in order to make a good recitation (cramming) fatigue the brain and lower the power of the intellectual faculties. It is not a process of ideation. The most eminent authorities in psychology agree that all sensations contributing to ideation must be symbolized or objectified *by the mind itself* in order to be comprehended; that we cannot think in determinate forms without the formation of mental images (the representative faculty) to *guide* our thoughts; and without these no concept can be formed, no reasoning is possible. Herein lies the true line of demarcation between a memorized and an understood lesson; the former is gained by mere repetition of words and phrases and does not make a lasting impression; the latter is an analysis by the will; the intellect frames its own concepts in regard to it, and it remains; it is understood, not in the phraseology of the text book, but as a real part of the mind's work. The master who knows thus how to draw out the powers of the mind in the acquisition of knowledge is the great teacher, and is always gratefully remembered; for he has revealed to his pupil that his life's success depends upon persistence in plans that are well conceived, and purpose in all his aims.

This process of culture by the will gives largeness and stability to the intellect; all the subsidiary faculties concur to aid the great aims of the will. The *memoriter* method, on the contrary, weakens the will and, I repeat, lowers the powers of the mind.

Nothing seems to be so much neglected as the higher culture of the will in the minds of youth.

The notion that to develop a strong, healthy mental life by daily exercise in purposive thinking is not a new one in medicine. The famous Dr. Rush gave lectures, in 1802, to college classes at Princeton on physiology, and he insisted that a student should exercise his mind every day in close thought in order to give expansion and stability to its capacity: that as muscular organs are developed by activity, the brain follows the same law, and may be increased up to full limits as the material basis of the higher forms of mental activity.

What is likely to damage the brain so that the will becomes impaired, if not lost?

I have mentioned the affective faculties, the basis of which are the feelings of pleasure and pain, that accompany and play upon purely intellectual actions and which regulate greatly their scope. It is the inordinate exercise of sensibility that is especially destructive of voluntary function. Success exalts good feeling which, if unrestrained, goes on to ecstacy; while disappointment, if unrestrained, tends to melancholia; thus the exciting and depressing passions unduly developed reduce the powers of the brain by wear and tear more especially in regard to the exercise of will; and the individual becomes exposed to the dominion of his passions. To grasp, to conquer, to excel, to accumulate, to control, to "corner", to envy, to hate, to revenge, to lust, to destroy; any or all of the terrible elements of evil that dwell in the soul may arise and govern the life of a man. His reason becomes subrogated to his passions which seem like *ferocious beasts*, in ambuscade, ready to leap upon and destroy it.

I have only mentioned incidentally the term insanity thus far, though I have said enough to exhibit this general definition of it; that from its mildest to its grossest forms, it is a loss of voluntary power, of freedom of the will, and I again assert that the brain and its functions are under the care of the medical profession. We are able to declare that men in the management of great trusts who engage in speculation in commercial material, or those in exalted positions in the state who exhibit a vaulting ambition, become dangerous to those trusts and to society, more especially if they practice excessive indulgence in mere animal appetites or live what is called a fast life.

The stupendous ventures made in stocks and produce in the great centers of commerce are often manifestations of insanity, superinduced by the methods I have indicated. Every faculty of the mind, intellectual and emotional, is urged without restraint to the utmost limit; the operator ceases to be reasonable: he becomes impulsive, therefore uncertain and dangerous to his environment. It is impossible to truly estimate the sinister influence which a rare stroke of fortune in speculative trading will work on the mental and moral constitution of the operator. The coolest men begin usually with reasonable circumspection, but, while winning, a species of intoxication gradually creeps upon them; they sleep less soundly and, quite commonly, drink intemperately and acquire a notion of their extraordinary judgment on ventures; they think that they have discovered the law of success. At length the tide turns, they begin to lose. Then they make bolder strokes for recovery, and failing, chagrin depresses them, and excitement gives them no rest, wear and tear is rapid, the brain loses tone, self-restraint disappears, madness seizes them, and they hurl everything within their grasp, not excepting the property of others, trust funds, bank capital—all are thrown into the wild vortex of hazard and swallowed up in ruin. These things are constantly occurring. Is it depravity or insanity?

In fever, *mania a potu*, moral shocks and narcotic appetite we see, every day, reason dethroned; and, alas, under powerful excitement the vilest passions often surmount and reign over the grandest minds. The inordinate indulgence of our affective nature enervates the brain, and the disturbance of nervous force impairs the tone of the circulation in the penetralia of the organ; its pressure, rapidity and volume are disturbed, the metabolism is changed and its functional volitional capacity becomes abnormal.

We warn men, but they will not heed us. They mock at our solicitude and boast of their capacious, unlimited powers; but, sooner or later, the wear and tear shows itself; the ship steers wildly because the pilot is losing his keen eye and his firm grasp of the helm. We turn to the institutions of learning and say to the teachers, "Your overstimulation and exaction, by a multitude of tasks, will impair the usefulness of your pupils; your prize scholars shall not shine in the contests of life so well as many of their duller fellows." We warn the people against luxuriance, indolence and a constant use of stimulants, and excess of any passion or appétite; for, while many organs of mere animal function suffer, the great brain itself becomes undermined. It is appalling to contemplate the social destruction about us on account of the passions of avarice, peculation and lust which have so greatly defiled public virtue.

I turn now to a brief consideration of the insane manifestations that we so commonly encounter in our medical practice. I refer to such affections as melancholia, monomania, hypochondria, neurasthenia, hysteria, alcoholism, morphinism and hypnotism. All of these may be ranged under the insane category. They originate mostly in hereditary types of constitution, in errors of education, want of parental training and abuse of the organism by excesses of any kind. It is unnecessary on this occasion to display the clinical phenomena in these diseases, and their differentiation; they are so well known. The reciprocal relations, in a pathological point of view, of mind and body are very marked. The physical conditions are often of a serious character, and the functions of organic life become gravely involved. In the treatment of these diseases the highest capacity of a physician is required. It is not only the sufferer who appeals to our experience; but the family upon whom these calamities have fallen.

What can we do for hard drinkers and drunkards—those dreadful creatures, often full of violence, and whose homes are made terrible? They are diseased constitutionally, and have become mentally incompetent. They generally freely acknowledge their vices and will promise, and even take the most solemn oath, to cease their potations; but they find that their will power is too weak to resist the diabolical thirst; the cry of the nerves for the missing stimulant is often expressed by cruel neuralgias that overwhelm their purpose of reform. What can save them? We reply, isolation and systematic employment for a period sufficiently long to allow organic and voluntary life to reassert itself. Let it be written over the portals of the place of detention: sobriety, liberty: inebriety, isolation, labor. One to two years should be required for their detention, and when dismissed, it should be on a ticket-of-leave only.

Precisely this method should be employed for the treatment of morphinism or any other narcotic habit; and it should clearly be inculcated that though they seem to be cured of the appetite, abuses have left such a vicious constitution that the smallest amount of any of these toxics taken, will arouse the old appetites and bring them under bondage again. Total abstinence is their only safety.

Modifications of this method will apply in the treatment of melancholia, monomania, hysteria, neurasthenia and hypnotism. While such patients should not be required to employ themselves in any exhausting physical labor; yet, with as little delay as possible, they should do something that will develop voluntary activity. As Dr. Weir Mitchell has shown us, complete isolation in special hospitals, under trained nurses, is indispensable; they must be cut off absolutely from seeing every one but the physician and his nurses. No correspondence should be allowed, or flowers or tokens of affection from parents or friends. The nurses must not be sympathetic nor overattentive, nor comply with all appeals for service. The subject must be taught self-help as far as possible, and be discouraged from complaining of aches and pains; nor dwell upon past sufferings. It will not hurt the patient to become indignant, or to weep; indeed, the nurse should assure her that these outbursts are indications that her disease is abating; but the nurse should never show resentment by word or deed, but simply reply that she is carrying out the doctor's instructions in all that she is doing. These poor sufferers at first are continually wanting something done for them—a bag of hot water, or a mustard paper, or a poultice, or to smell camphor, or bathing of the face or hands with cologne. All these requests must be refused. After a time the worst cases of them will begin to grow calm and obedient, their impulsive actions will diminish, and self-control at length emerge. Then a course of treatment should be entered upon that will increase the power of voluntary activity. Massage and electricity should have been employed from the first; but there is a danger in an excessive use of both of these agencies; for if too constantly used, a habit will become established that will impair self-control. Sewing, knitting, embroidery, drawing or painting, should make up a portion of each day's duties. I have often directed a review of certain portions of the arithmetic, or geometry, and in some cases the writing of English into French or German, following the vocabularies and models in Ollendorf's grammars. All of these exercises require a positive exertion of the will, and they grow into self-possession in this way very satisfactorily. For forty years I have practiced a method of developing self-control by simply exacting a solemn promise from such patients, that they would not speak of their ailments to any one but myself. Indeed, with office clients who are suffering with milder hysteria, hypochondria and neurasthenia, it works well. I have had a large observation in this line of practice, and will say that I think that the ingenuity exercised in their successful management is greater than in most other affections. The so-called Christian science or faith cure people, get their success in this way. My limits forbid my further enlargement of this subject.

What I have desired to show is the differentiation of will and impulse—that the essential element in the perversion of intellection and emotion in all insane diseases is the abeyance of the will; that we should not say of these patients, that they have an obstinate will, but rather that their ideas are unregulated and unrestrained, and cannot be otherwise without a restoration to health of the area of the brain where consciousness exists; that to search successfully through all the hidden paths of the misty labyrinth of mental alienation, we must take as a guiding thread, that functional ill-health superinduces a lowering of consciousness and an invalidation of voluntary power. By all approved remedies we must seek to improve the general health of the body and a rational volition.

In a brief conversation I had with Prof. Charcot last summer (he was my clinical teacher many years ago), I ventured to say that I thought in the studies of the startling phenomena of hysteria and hypnotism, sufficient account of the aberration of the will had not been set forth. He replied that there were in these cases manifestations of strong will. But, I continued, the researches under your direction by Gilles de la Tourette and Cathlineau had shown that these cases were in bad health; therefore these mental phenomena were merely impulsive; that the influences of suggestion in hypnotic cases were the guiding sensations.

In a final remark let me say that this subject is largely related to cases in medical jurisprudence which involve a differentiation of insanity and depravity; also in various questions of moral irregularities, and the difference between automatic and purposive action. This whole question is too large to compress satisfactorily into a paper of thirty minutes length.

Discussion.

Dr. C. H. Hughes, St. Louis, Mo.:—I would qualify the
statement of the paper that hypnotism is an absence, per-
version or impairment of the will to the extent, viz.: that it
is a perversion of the will dependent upon a *hypnotic* or
sleepy state. Some of you may know that I offered a sub-
stitute term some years ago for hypnotism, which was som-
navolism. This term I consider more expressive of the
hypnotized state than hypnotism. Hypnotism signifies sci-
entifically nothing except a condition of sleep, which
it is not exclusively. Hypnotism is a scientific misnomer
because he who is in a sleepy condition is simply in
generally a drowsy condition; whereas something in the
individual becomes passive in the hypnotic state. The
individual becomes abeyant to the suggestions of another.
Abeyance to suggestion is the phenomenon of hypnotism.

It is somnavolism. It is the normal will of the individual made obedient to another through the sleeping process. It is a partial absence of the individual's normal will through the sleep process (*somnus a volo*). It is not a psychical process induced by the influence of the operator as was taught by Mesmer and his followers, and whose term *mesmerism* was equally as good as the substitute term of *hypnotism*, both signifying a similar mental condition. I called attention to the term proposed for this condition some years ago. in the *Alienist and Neurologist*.

Dr. Comegys has given us an excellent dissertation on mental hygiene for the public. Such a paper ought to appear in the higher class magazines that the people may know the true relationship between the psychical and the physical in their mental processes. I presume every one in this Association is in accord with the sentiments of the paper, and no one is better qualified than Dr. Comegys to discuss the subject.

Dr. C. G. Comegys, Cincinnati, Ohio:—I am glad to hear such kind expressions from my friend, Dr. Hughes, on this very important subject. I do not think we can over-estimate its importance. I have a feeling, which I believe is true, that this profession of ours is the greatest in this or any other Nation. Instead of playing a subsidiary part, we have more right than most men to stand by and dictate in regard to matters pertaining to the welfare of the public, and we should exercise all the influence we can to get recognition in the State for our profession.

In looking over the proceedings of the International Congress of Hygiene and Demography, which met in London last year, and noticing the welcome extended there to the French, German, Italian and Austrian scientists, I regretted to note that there were only two or three men to represent this great Republic of sixty-four millions of people. There was a distinguished gentleman from Minnesota and Dr. Vaughan, an eminent man, from the University of Michigan, but they did not officially represent our country; they were not asked to say anything.

Sir Joseph Fayrer, President of the Congress, and one of the most distinguished men in Great Britain, declared that though they had accomplished much work in England through the Local Board, a sort of national medical board in London, where Simon, Burdon-Sanderson and Klein have labored successfully, there is no telling what could have been accomplished if they had had a medical minister of the State.

NOTE ON THE HYSTERICAL CONCOMITANTS OF ORGANIC NERVOUS DISEASE.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY C. H. HUGHES, M.D.,
OF ST. LOUIS, MO.

The conclusion, "Some hysteria, *ergo* all hysteria," is a clinical conclusion which has proven in numberless instances fatal to correct diagnosis and to the welfare of many patients.

This neurosis may be latent as any other inherent tendency to neuropathic instability may be and often is, until some psychical or pathological cause calls it into morbid activity. While hysteria is essentially an imitative and functional disturbance of the psychomotor, sensory and ganglionic centers, it is no more unreasonable to expect its development in conjunction with grave organic lesions of the cord or brain, than to anticipate pain or spasm from profound central disease or even from multiple neuritis of the motor nerves extending to the cord centers or involving contiguous peripheral sensory nerve fibers.

The time has fully come, in the progress of neural pathology and clinical neurology, to recognize this fact and realize its true significance in our clinical judgments, for without such proper recognition we may be too often led astray in diagnosis and prognosis for our patient's welfare or our professional reputations before a scrutinizing and discerning public.

Hysterical patients are prone to develop peculiar inherent neuropathic characteristics of their organism under physical as well as psychical stress, and this physical strain may be a real central or peripheral structural disease.

It has been quite a number of years since the writer first began to think in this way, and ample observation has confirmed the correctness of his earlier judgments, though not until after some serious clinical errors had been recognized after the issue had been determined post-mortem.

So far back as 1867-8 and 9, 80 and 81, several of my autopsies at the Fulton Asylum for the Insane on patients who had died of organic diseases of the brain and other organs, some of whom had been pronounced *only hysterical in the communities* from which they came, and one or two of whom had hysterical seizures while they lived in the institution, set the author to thinking on this subject, and led to a final revision of his *previously entertained* view that hysteria was always a functional nervous disease invariably only associated with functional nerve trouble.

It was not long after leaving the asylum that a very markedly instructive case, because of its tragic ending, fell under our observation.

The case was that of a lady past the menopause, and mother of several grown children, who suffered from disseminated sclerosis, with characteristic pupillary changes, intention tremors and insomnia, and with numerous hysterical symptoms and frequent paroxysms.

Her case had been pronounced by old and experienced physicians to be hysteria and hypochondria (which latter, by the way, is another much misapplied term because it, too, does really, though less frequently, co-exist with grave physical lesion).

A multiple neuritis co-existed in this case and she had exacerbations of neuralgic pains.

This woman really suffered physical agony, but the verdict of her family physician and a consultant from the city, that the case was hysteria, lost her the sympathy of her husband and children which she deserved and craved, and in her despair, chagrin and grief, she took her life.

Thos. Buzzard, in his presidential address before the London Neurological Society in January, 1890, has caught a glimpse of our subject in a little different light. The essay as since published by Churchhill, of London, is entitled, "The Simulation of Hysteria by Organic Disease of the Nervous System." In this little brochure the fact has not escaped this able clinician's observation that hysterical symptoms may co-exist, even with so grave an organic disease as disseminated sclerosis, but he thinks it is the sclerosis which causes symptoms which simulate hysteria, whereas we think the hysteria is real, and the sclerosis is the *casus mali* that brings into prominent morbid activity the latent functional neurosis.

He even makes certain hysterical symptoms a necessary part of the organic disease he is discussing. We quote—"It appears to me reasonable to conclude that many symptoms which have come to be considered characteristic of hysteria will, if examined in the light of improved knowledge and experience, be relegated to disseminated sclerosis. The figure of hysteria shrinks in proportion as the various forms of organic disease acquire greater solidity and sharper definition."

But we have not always found this to be strictly true, except as the fatal ending of disease approaches, and we have in view one instance in a male which though death is impending from probable syphilitic arteritis and gummata with cerebral congestion the patient has numerous crying spells with spitting out of food and medicine, and violent tendencies at times followed by laughter and tranquility. The congestion of brain is evidently a malarial complication with cold stage, fever and sweating, reaction and intervening better days.

Buzzard's book is good reading *a propos* of our subject and bearing in mind the difference of view, viz., that in our opinion the hysterical symptoms are always brought to the surface in persons who have this neuropathic diathesis and in no others by the irritation of an organic disease, while Buzzard regards the hysterical symptoms as necessary signs of the organic disease. He has found hysterical symptoms in Friedreich's ataxia and secondary cancer. We have one of the latter cases now under treatment or rather as a sequence to a second removal, the patient having, also, been really insane with delusions of electricity, etc., and periodicity of exacerbation as of malarial poisoning.

He details a case of hysterical paraplegia dependent on atrophy of the ilio-psoas muscle, and a number of cases of disseminated sclerosis mistakenly diagnosed as hysterical, one of them in a male patient and one case like our own terminating fatally.

We remember to have seen one case of posterior sclerosis in a female, in which the pharyngo-laryngeal crises were so distinctly intermittent and the sensation of globus was so like that of hysteria that we were often uncertain as to whether the patient did not really have the true globus hystericus from the irritation of the changes in the pons and medulla and the reflected gastric crisis. She had other hysterical symptoms, and had in her earlier life been a victim of this neurosis spasmodica. She died, however, in a cardio-laryngeal crisis.

In the recent publication of the Salpetriere Cliniques,[1] Volume, 1, 1872, Charcot relates a case of Morvan's disease complicated with hysteria and several cases of hysterical tremblings having associated variations of intention tremor and vibratory tremor. These were probably, as they were apparently, associated with sclerosis.

Five days ago a lady, now dead of cerebral congestion, came to my office at the instance of Dr. Mayger of this city, with general hysterical trembling. Her history had been one of mental shock and over nerve strain.

I have seen a case of abscess of the cerebrum following a cerebritis preceded by hysterical symptoms till near the close, and a school teacher of 22 years overworked and anxious about her ability to continue teaching developed hysteria along with general neurasthenia and malarial poisoning, the latter ending in cerebral congestion, temporary insanity and death, the hysterical symptoms disappearing as the gravity of the cerebral disease increased.

Hysteria sometimes displays itself in connectio with epilepsia mitior as well as in the grave form o hystero-epilepsia. It has been developed in my observation after diphtheria, scarlatina and rheumatism. In these instances I have always found a famil history of this or other form of spasmodic neurosis. It is not uncommon in ordinary chorea, especially later in life after an earlier chorea; one of m present cases of chorea major shows hysteria markedly. But these are both ordinary functional nervou diseases.

I think I have seen it in one instance brought ou during the convalescence from hemiplegia as chorea sometimes appears.

With these clinical facts before us, are we not justified in extending our search for hitherto unsuspected organic disease of the nervous system as causes of hysterical symptoms, as well as in looking to the womb for the fountain source of this symptomatic neurosis and in relegating to the back-ground the prevailing clinical dictum that, "Where hysterical symptoms present, the trouble is only a functional one of the nervous system?

It is undoubtedly true, as Buzzard has clearly shown that hysterical symptoms develop *de novo* only in part and as part of the expression of organic nervous disease. I have seen such cases—cases where the mind was for quite awhile in doubt as to the real nature of the disease—whether organic or functional. As one may see paralysis appear and find the cincture feeling present and the knee jerks absent in hysteria sometimes, so may he see symptoms of hysteria in real organic disease. I may note here a case of salam tremor or rhythmical contractions of the sterno-mastoids, long suspected by myself to have been hysterical, which proved to have been caused by cervical pachymeningitis of which the patient subsequently died.

As this is but a note of clinical warning we trust this word may prove sufficient to the wise clinician and with a brief quotation slightly qualified to compass our own view we close this paper as Buzzard has introduced his able address, our object being. "To draw attention to the frequency with which symptoms liable to be looked upon as (solely) hysterical are found to be really due to structural changes in the nervous system" as the exciting if not solely causative factor.

Discussion.

Dr. J. G. Kiernan, Chicago, Ill.:—It seems to me in addition to the point raised by Dr. Hughes, that there is another point that it will be well for us to consider. There is a very popular notion that hysteria is a purely imaginary condition. But there is a growing tendency to look on hysteria as an expression in many instances of congenital defect the result of a teratological condition in a woman; so far as clinical phenomena are concerned, due to instability secondary to *that teratological condition. Of course, it may be acquired,* and the natural corollary would be that it can be simulated by almost any of the organic neuroses.

A little over nineteen years ago I reported a couple of autopsies in which secondary hysterical paraplegias, spinal changes, were found which were considered secondary hysteria*; in other words, it was an ascending condition.* *is fair to assume that it may have* originated in such a c dition. The repeated exhaustion of the nerve symptoms by the hysterical condition has resulted in a pathological change in the center with a direct organic condition as a result of that.

Dr. Archibald Church, Chicago, Ill.:—It is with extreme satisfaction that I have heard the paper of Dr. Hughes on this important subject. He has sounded a note of warning, which seems to me has been long needed in the general profession. We know there is a general tendency on the part of the average medical man just as soon as he encounters well marked symptoms of hysteria to attribute every manifestation of disease in that particular individual to hysteria without further investigation.

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[1] Clinique des Maladies du Systeme Nerveux, M. le Professeur Charcot, pendant les annees, 1889-90 et 1890-91, sous la direction de Georges Guinon Chef de Clinique. Publications du Progres Medical.

"Relation d'un cas type de maladie de Morvan complique d'hysterie. Superposition des anesthesies hysteriques et de Morvan chez le meme individu".

I have read the little book of Buzzard with a great deal of interest, and I feel with Dr. Hughes that he has gone too far n attributing to hysteria the importance he has in relation o organic nervous disease. On the other hand, I feel that Dr. Hughes has gone a little too far in attributing the position he has assigned to hysteria in his article. The main point to remember is that hysteria may be followed by organic nervous disease; and that a person with organic nervous disease is not therefore exempt from hysteria, but rather is the more likely to be subject to it.

I am glad Dr. Kiernan referred to some of these French cases in which organic changes have been found and attributed to hysteria. For instance, hysterical contraction has been noted and assigned to hysteria, and after many years changes were found in the cord and attributed to hysteria.

If these cases were more thoroughly studied, I think we should find organic disease of an ascending character upon which hysteria had been engrafted or which had occurred in hysterical individuals.

I trust the paper of Dr. Hughes will be widely read, as it will point out to the practitioner that every hysterical case demands as careful attention to possible organic changes as if hysteria were not present or suspected.

Dr. James Taylor, London, Eng.:—I was very much instructed and interested in the short paper of Dr. Hughes, from the fact perhaps that I knew Dr. Buzzard was collecting material for his book, which he afterwards utilized in a paper read before the London Neurological Society.

I have watched a good many cases similar to those reported by Dr. Buzzard, and had an opportunity of examining some of them post-mortem. As I understood him, ascending sclerosis was the disease he considered chiefly in reference to hysterical manifestations, with the other manifestations of organic disease; that in disseminated sclerosis there are a great many hysterical symptoms, and these may serve to us as danger signals, not by any means to be neglected or passed over; that in such profound disturbance of the nervous system as occurs in a disease like ascending sclerosis, any underlying instability of the nervous system, which is usually manifested in so-called hysterical phenomena, is liable to be present. In that sense the hysterical symptoms are manifestations of organic disease. Of course, every disease, strictly considered, is functional in its manifestations. Although we know there is now a line of organic change in the nervous system, still the symptoms of disseminated sclerosis are manifestations of disturbed function. I think in order to be on the right road in the whole matter, we shall have to get a definition, which I admit is a very difficult thing to do, of hysteria on the one hand, and organic disease on the other. Do we know that there is such a disease as hysteria at all; that is to say, a purely functional disturbance of the nervous system without some underlying organic change? The change may not be manifest to our methods. There may be chemical changes. Of course, we know that a certain class of symptoms are classed under the convenient term of hysteria, but we have no accurate definition. And while I say at Queen's Square our attention has been directed to the so-called hysterical manifestations of disseminated sclerosis, I do not think that the hysterical manifestations are by any means confined to that.

I think Dr. Hughes is to be congratulated on the extremely able and vigorous way in which he has brought the subject before the Section. Through the kindness of your Chairman I am here with you, and I am extremely gratified to have been here this afternoon to listen to the able paper which Dr. Hughes has read. (Applause.)

Dr. L. Bremer, St. Louis, Mo.:—I wish to state that the paper which Dr. Hughes has read is in perfect harmony with the modern tendency of neurology—that is to say, the "weeding out" process of the neuroses. When we say that such and such a disease is a neurosis, as a rule we thereby acknowledge that we are ignorant of the true nature of the disease. The trend of medical progress, and of neuropathology in particular, is to find the anatomical substratum of the disease and the pathological factors. This has been done and is still being done in a great many of the manifestations of the nervous system which we comprehend under the name of hysteria, and which has been alluded to by the preceding speaker as a rather vague and meaningless term. I can add my testimony to the observations that have been made as to the utmost difficulty when symptoms obtain in the perplexion of diagnosis, especially in the earlier stages of insular sclerosis and hysteria. I have observed for a number of years cases such as have been reported, and had I not known that these investigations were going on, and observations had been made previous to 1890 that insular sclerosis sometimes does mimic hysteria, my attention would not have been called at so early a date to the possibility of the anatomical lesion which afterwards developed in this case. I wish to call the attention of this body to another fact which perhaps is not quite sufficiently insisted upon, and that is, like epilepsy, hysteria sometimes marks the prodroma or initial stage of infectious diseases. I have observed hysterical attacks in some cases of la grippe during the last two epidemics we have passed through, and one case especially, that occurred at the St. Louis Hospital, had all the phases of grand hysteria as Charcot describes them. Every physician that saw the case and that had a knowledge of the hysterical attacks and had seen them before, pronounced it a case of true grand hysteria, the various phases being well marked. Nobody thought of la grippe at that time. When I made a post-mortem examination I found an influenza pneumonia complicated with basilar meningitis. There was also a cribriform state in the pons. This state had been produced by the pneumococcus of Friedlander, an organism which develops in a culture medium as well as in the blood and in the tissues of the body a gas which is to a great extent hydrogen. The meningitis, together with the cribriform state of the pons (in one place this looked like worm-eaten, and in the cavities the pneumo-bacilli were present in large numbers, together with amyloid corpuscles) must here be looked upon as the causes leading to symptoms resembling hysterical attacks

I have alluded to this case for the purpose of proclaiming myself in harmony with the modern view of eliminating the neuroses, and of showing that in a great many of those cases that were formerly looked upon as purely functional, there is after all a well marked anatomical substratum.

Dr. W. J. Herman, Ann Arbor, Michigan:—One remark made by Dr. Bremer calls to my mind a thought that has not infrequently been suggested to me, as I have had an opportunity to study some of these cases with hysterical manifestations, and also to make post-mortem examinations in some cases of disseminated sclerosis. I have noticed in some cases of disseminated sclerosis in which I have subsequently made an investigation post-mortem, that certain patches of sclerosis were present in the pons. From the frequent association of the hysterical symptoms with those cases in which the lesions were largely in the pons, the thought has been suggested to my mind that possibly it is in this portion of the brain that a disturbance of metabolism or disturbance of circulation, or whatever it may be, must be set up and serve as an anatomical or physiological substratum upon which hysterical manifestations depend. This was further impressed upon my mind by the study of a case in the University hospital some two years ago, which was first thought to be a case of pure hysteria. The physician through whose hands it passed so recorded it, and the emotional manifestations were at first the prominent ones; but at the time the case came into the hospital there was evidence of gross lesion, and the patient was not long in the hospital before death ensued. We found a parasitic growth at the base of the brain of considerable size. It was on the right side of the pons. In this case the hysterical symptoms were at one time very prominent, and the case points in my mind to this portion of the brain as being possibly the region from which hysterical manifestations may arise. Possibly in the early stages the disturbance of circulation, alone occasioned by such lesion might account for the hysterical symptoms.

Dr. J. J. M. Angear, Chicago, Illinois:—A case somewhat germane and perhaps broadening the views that have been entertained came under my observation some years ago. It was a lady patient who had all the manifestations of uterine trouble. She had the peculiar mental condition and a great many of the nervous symptoms common to patients suffering from uterine disease, and upon examination I discovered hyperæmia, an irritable condition of the mucous membrane of the os and cervix uteri. I congratulated myself upon the examination that I had diagnosed the case correctly, treating her in the usual way with sedatives, astringents, etc. She apparently improved for a while with this treatment. but greatly to my surprise in a few weeks she died of apoplexy. Upon post-mortem examination we found the posterior part of the anterior lobe literally "plowed up," as Watson says, showing that my diagnosis was correct only in part, the brain trouble entirely overlooked. There was organic difficulty going on in the brain, and these manifestations which we attributed to the irritable condition of the uterus must not be relied upon too confidently, remembering that an irritable and congested condition of mucous membranes are symptoms of nervous and brain troubles.

Dr. C. H. Hughes, St. Louis, Missouri:—I think Dr. Church did not quite catch my view in regard to Dr. Buzzard. Dr. Buzzard speaks of the development of hysterical symptoms as a part and parcel of certain nervous diseases, especially disseminated sclerosis. He speaks of certain hysterical symptoms as a part of the symptom-grouping of disseminated sclerosis.

The points I make in this paper were not made in the *book written* by Dr. Buzzard. The substance of my paper was prepared by me years ago. I presented a case before the St. Louis Medical Society, in which the symptoms were markedly hysterical and so regarded by other physicians. She finally died with an abscess at the base of the brain. Dr. Buzzard takes no account, in his book, of the latency of hysteria as a neurosis brought into activity by a superimposed *organic nervous disease. From the nature of* disseminated sclerosis, we know very well that its *foci* may be so distributed as to act as sources of irritation, and my view of these cases is that it does act as such in bringing into activity the latent neuropathic tendency, and these symptoms appear in no other patients than the inherently hysterical. They do not appear *de novo* in persons who do not possess the *neurosis spasmodica*. I believe *accumulating* clinical experience will confirm this statement. In all of these cases there will be found I think, a family history of the neuropathic diathesis.

The first case that attracted my attention outside of an asylum was in 1872. My first observed case of disseminated sclerosis with hysterical symptoms was pronounced hysterical only *in* 1872 by a distinguished physician, of St. Louis, and other physicians in the patient's neighborhood. It was sclerosis associated with hysterical manifestations. Hysteria is frequently associated with disseminated sclerosis. I believe it is a safe thing to suspect the beginning of sclerosis in patients with hysterical symptoms who also have lowered reflexes or impairment of them and rhythmical movement or *intention tremor.*

DISORDERS OF PANTOMIME OCCURRING AMONG APHASICS, STUDIED PARTICULARLY WITH REFERENCE TO THEIR MEDICO-LEGAL BEARINGS.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 8, 1892.

BY CHAS. K. MILLS, M.D.,

OF PHILADELPHIA.

[ABSTRACT.]

Pantomime is the representation of ideas by action and movement; it is an intellectual act; according to Hughlings Jackson, it differs from gesticulation as a proposition does from an oath, although the terms gesture and pantomime are frequently used almost interchangeably. Amimia and paramimia are terms which have a corresponding import, as regards pantomime, to aphasia, paraphasia, paralexia, etc., with reference to speech. We may have a jargon of signs and motions, as well as of words and sounds; we may have a sensory or receptive, and a motor or emissive amimia; sensory amimia is in fact a form of apraxia. Pantomimic disorders may be mixed, combined, or associated; we may have all blendings of them just as we have of ordinary speech disturbances. A study of the losses and disorders of pantomime will often be of great assistance to the physician in diagnosis; and in some medico-legal cases decision will largely hinge upon the consideration of the presence, absence, or disturbance of intelligent pantomime. Different and conflicting interpretations are too often given to the *pantomime observed among aphasics*; every case of aphasia should be studied for itself as to pantomime.

In nine cases of aphasia or pseudo-aphasia which were investigated, notable differences and peculiarities in pantomime were presented by the patients.

In one case of brachio-crural monoplegia, almost complete motor aphasia with marked preservation of pantomime were present; in a hemiplegic with convulsions, word-blindness, verbal amnesia, and motor aphasia, there were marked sensori-motor disturbances of pantomime; in a third case, one of right hemiplegia, nearly complete aphasia chiefly of the motor type, the pantomime was varied and uncertain; a fourth case was one of right hemiplegia with marked contractures, complete aphasia of the mixed type with a single recurring utterance, and almost complete amimia; a fifth was a case of right hemiplegia, paralysis of the face, almost total abolition of pantomime, with almost total sensori-motor aphasia, and obstinacy and energetic emotional gesticulation. In a sixth case of marked hemiplegia of gradual development with motor aphasia and anarthria, only a slight degree of loss of pantomime was shown, while case seven, one of right-sided pseudo-bulbar paralysis with anarthria and preservation of writing ability with the left hand, exhibited also full preservation of pantomime. Case eight, was an example of right-sided pseudo-bulbar paralysis and ophthalmoplegia, with anarthria, marked oro-lingual paresis, and full preservation of pantomime, but with considerable mental apathy. The ninth and last case recorded was one of double hemiplegia from successive lesions on the right and the left side of the brain, with absolute abolition of speech and pantomime.

The study of pantomime may become an important diagnostic aid in the fixing sub-cortical lesions, and particularly the position of a sub-cortical lesion with reference to its distance from the cortex. Some of the cases detailed showed that when the lesion was entirely in the straits between the ganglia, the corona radiata escaping, pantomime was either not lost or was soon entirely regained. The speech defect is of the nature of an anarthria or pseudo-bulbar affection, and a diagnostic point is the ability of such patients to throw even into the paralyzed members some volition.

Marked differences in the disorders of pantomime will be found in cases of paralysis and of motor or mixed aphasia which are apparently identical, or at least, very similar in character, which identity or close similarity, however, will often be found to be apparent rather than real; for investigations will show in many cases differences in the degree and character of the motor paralysis, sensory symptoms, and aphasia, which are sufficient to separate the pantomimic disorders into classes.

The medico-legal investigator, even without any appreciation of the nature, extent, and location of the lesions, would recognize important differences between these patients—difference both in speech and pantomime which make it essential for just decisions to carefully study both.

The "yes" and "no" of an aphasic are well known to have very diverse degrees of value. One of these two words may be used to express both assent and dissent; or with its proper meaning; or to express assent when dissent is ment; or simply as an emotional, interjectional, or accidental expression. In like manner, the usual pantomimic method of expressing assent by the forward nod or bowing of the head, and of indicating dissent by shakes or half rotations of the head, or any other movements apparently meaning "yes" or "no," will be found in aphasics to have as many interpretations as the articulated "yes" and "no."

Great care should be taken not to misinterpret the emotional manifestations of an aphasic. The gestures and appearances of the face indicative of displeasure, anger, obstinacy, and irritability, etc., are often strongly suggestive of dissent; while on the other hand those which merely indicate pleasure, amusement, or playfulness, may sometimes be mistaken for assent or accord—facts which the last two cases particularly illustrate.

True amimia is an intellectual disorder just as is true speechlessness. It may be correct to say that emotional language is apparently unaffected in aphasics; but it would not be correct to say that it is entirely unaffected. The expression of the emotions while frequently correct, sometimes energetic, and often violent, is in serious cases of disturbance of intellectual pantomime, not uniform and under control. In many normal individual emotional manifestations may be instantly controlled at any stage, and in accordance with varying inhibitory powers in different individuals, weeping can be turned to laughing; a smile to a frown; the sounds of lamentation to those of rejoicing, by the trained and skilful actor, and in varying degree this power of control is preserved by all normal individuals. In aphasics with serious disturbances of pantomime, the losses shown in the emotional side are seen in meaningless continuations or repetitions, by slow transitions, and undue excitement.

Discussion.

Dr. J. G. Kiernan, Chicago, Ill.:—It is well known that paretic dementia is by no means a bad state to test a good many conditions. There are phenomena which I and a number of others have noticed in the paretic pantomime element. The facial expression may be that of depression, while the general state of the mind is exaltation, and of course *vice versa*. This factor in dealing with pantomime should be taken into consideration. Many aphasics do not retain their mental organization in its entirety. Their intuitions are weak and in the place of one conception inhibiting the other, both come into play, and we have alternation, and at times certain ideas of a directly opposite character are produced from a suggestion. The uncertainty resulting from this condition may produce uncertainty in the pantomime. It has been shown by two or three English writers that in secondary confusional lunatics of the incoherent type, a little attention to certain lines of speech will produce seeming coherence which is a species of reflex intellection, the product of suggestion, and automaton-like.

Dr. Archibald Church, Chicago, Ill.:—Much as aphasia has been studied, I feel that Dr. Mills has introduced us to an entirely new phase of the subject, which we can all follow up with interest and advantage in our own cases. Gesture and pantomime are acquired by a child only after the speech faculty is well developed, and one might expect *a priori* that this complex addition to thought expression would be readily implicated. A case of meningitis recently under observation was followed by complete agraphia and alexia, and when the patient finally got on to his legs, it was found that the power to walk was lost, though station was firm even with closed eyes. There was locomotor amnesia, if I may use such a term, a complete loss of a group of coordinate and continued lower extremity movements corresponding somewhat to the arm difficulty of Dr. Mills' patients. All other movements could be executed with precision and promptness when the patient was in a chair or in bed. In this instance the implication of the medulla as shown by respiratory and cardiac symptoms and sugar in the urine, of the visual area by the alexia and agraphia, leads me to think that the inflammatory process next involved the leg centers in part, by extension upwards along the middle line. The localized pain in the occipital region may also add strength to the supposition. With convalescence the patient learned again to walk, first stepping forward with one foot and bringing up the other, and the aphasia also passed away in the course of a few months.

Personally I desire to express my appreciation of Dr. Mills' instructive paper.

Dr. J. J. M. Angear, Chicago, Ill.:—There is nothing to criticise in the admirable papers of Dr. Mills, but perhaps we might broaden the circle a little in some of these abnormal, or rather we might call them normal, aphasias peculiar to certain individuals. Some individuals seem to be congenitally defective of word sight. Give them a book and ask them to commit a certain thing to memory, they are not able to do so in quiet, but if they can go outdoors or into a room by themselves and commence reading out loud as if reading to an audience, they will soon commit it to memory, showing that they want the sound and not the sight of the words. I knew a gentleman of scholastic attainments that lived to a good old age, who never attempted to read anything in public, unless he had an opportunity of sitting down and apparently studying it. He would then be able to get up and read and no one would ever be the wiser for it. Some never make good readers—forever miscalling words and going back and correcting themselves. Again, by watching closely you will find our good readers can look almost a line ahead in reading, showing that they have very good word sight; while if you inquire of those whom we call poor readers and who have a hesitating style of reading, they simply read word by word as they go along, never looking far enough ahead for the next word, showing that they have very poor word sight. If you give some young men a written examination they make a failure of it; whereas if you make it oral they are successful. You take the same individual and talk with him, and you will find that he is pretty well posted. Very few of our scholars—learned men—become writers. We have other illustrations. We have fine writers of scientific works, of literary works and of fiction—men who cannot get up here and talk five minutes. Words fail them. Give these same men a pen, the choicest words and sublime thoughts come. Their tongues are weak but their pens are mighty. I take it that this is something in the line of aphasia. With reference to pantomime you will notice some individuals in speaking, without any special training in this direction, their gestures give great force to what they say, because there is a meaning in them; in other words, they are appropriate; while others are eternally making gestures that are decidedly inappropriate and awkward, showing that pantomime is very defective in their case.

Dr. William Fuller, Grand Rapids, Mich.:—I wish to say that I have in my possession the cast of a brain in which the first temporal convolution is almost entirely wanting, while the second convolution is very highly developed. This man could remember nothing that was told to him and was generally supposed to be an imbecile. He was a frequent attendant at operas, theatres and all places of entertainment. He went about the city continually humming tunes to himself without using words. He was a man that after hearing a tune once took it in and never forgot it. He very seldom talked to anyone and then only a few words, The occipital lobes in the cast show a very high development as well also does the frontal part of the brain.

Dr. A. D. Rockwell, New York City:—In common with others I have seen various forms of aphasia, but a short time ago a case came under my observation, which although not altogether unknown is certainly of rare occurrence. I allude to what Kusmaul has termed "word blindness," or inability to comprehend visual word symbols. A gentleman, aged about 60, who had suffered from a slight attack of hemiplegia, had no defect in speech, but if he attempted to read either to himself or aloud—which he could do only with difficulty—the printed page conveyed absolutely no meaning to his mind.

This condition, which is termed also "alexia," is quite different from the simple inability to read aloud—cases of which are not infrequent. These cases of motor aphasia are specially interesting from the fact that sometimes they are only transient, but in this case the lesion was of a character that rendered the loss permanent and the patient succumbed to a second and more severe attack.

Dr. H. B. Hemenway, Evanston, Ill.:—I want to call attention to one point which seems to me to be very important, and that is the differentiation between true aphasia and the matter of education. It seems to me that Dr. Angear in his remarks has confused the lack of education with a diseased condition. As I understand it, aphasia is a diseased condition. Of course, a man may understand nothing of what we say for the simple reason that he has never been educated.

An Indian who has never learned our language, could not understand our conversation. In a like manner, a foreigner may be able to read English easily, but understand the spoken words slowly, or not at all. There is, as Dr. Angear has said, a great deal of difference between students. One student may pass a good oral examination, but not a good written one, for the simple reason that his preliminary education has been neglected. That is not a diseased condition, but it shows the lack of development. There are undoubtedly persons who have natural gifts in certain directions. These gifts are often the result of hereditary training, or education. It seems to me that pantomime is often the result of hereditary influences. I say hereditary because some nationalities exhibit the power far stronger than others. There are others, who on account of loss of speech, or of occupation are obliged to use pantomime. This power is the result of training, and compared with such persons an individual may be greatly lacking, and not be at all diseased.

Dr. L. Bremer, St. Louis, Mo.:—It is a fact that there are cases of pantomime without aphasia, and that in these cases localized lesions have been found in the inferior optic thalamus. I do not wish to enter into a lengthy discussion of this paper, but I simply wish to say that it has always seemed to me that in cases of aphasia there is some degree of mental weakness always present. When the subject was discussed in France in the early days of the aphasia question many held that the greater the aphasia the greater the mental defect.

Dr. C. H. Hughes, St. Louis, Missouri:—I hardly think that the statement, the greater the aphasia the greater the intellectual lesion, should be permitted to pass entirely unchallenged, as very much depends upon the condition which may have precipitated the aphasia. I do not see, when we are called upon to testify in court, how we can take the ground that a distinctively traumatic condition causing aphasia must necessarily produce mental impairment. It is true in the beginning of the aphasic attack where the cerebrum is largely implicated from the œdema which immediately follows an attack, that we find a large amount of concomitant mental enfeeblement, but as recovery reasserts itself, we find that nothing appears to remain in some of these cases, so far as my observation goes, but the simple fact of the aphasic lesion. I think we ought to be a little careful about promulgating a view upon this subject that will embarrass us before the courts. I believe that where persons have aphasia, from a circumscribed lesion that is traumatic or a lesion which is simply one involving the organ in sudden closure, we may have a purely local and limited aphasic lesion the result of adventitious change, or syphilitic cerebritis or embolus involving the middle cerebral artery, which of course would not in the nature of things be distinctively limited to the posterior aspect of the third left frontal convolution. While it is in the main correct to state that there is usually and in the beginning of the attack something more than the circumscribed mechanical embarrassment producing the aphasia, at the same time I believe there can be no doubt about the fact that there is such a thing as aphasia which is limited to the third left frontal convolution, the result of direct and limited local mechanical embarrassment, whether it be the depression of spicula of bone which is removable, the obstruction of an embolus or a lodged thrombus, leaving finally only aphasia without other mental failure; nevertheless, as a general rule the proposition is correct that you have accompanying enfeeblement, especially in the earlier stages of the disease, but the patient may recover from all but the speech failure.

Dr. C. K. Mills, Philadelphia, Pennsylvania:—Although the discussion has wandered a little sometimes from the particular matter of pantomime, I am gratified at the turns it has taken, as in nearly every case some point has been brought out bearing on this subject.

The question of the preservation or loss of pantomime in various forms of insanity, alluded to by Dr. Kiernan, is of great importance.

The remarks of Dr. Angear were interesting as emphasizing points which I did not emphasize enough. It is important, as remarked by Dr. Hemenway, in considering pantomime or any allied subject, to take into account in our studies not only the diseased state and the symptoms which are expressive of it, but also the original capacity of the individual, and his development or lack of development. Take, for example, the cases on which this paper was largely founded, cases which I have studied in the Philadelphia Hospital; many of them are persons of limited education, and have had no special manual, or other training of a higher sort; these facts must be weighed in discussing aphasic or mimic disorders. An actor or an orator, one who has his powers of pantomime highly developed, and one who has a good inheritance and original capacity, may recover speech and pantomime sooner or more fully than others.

With reference to the question discussed by Drs. Bremer and Hughes of aphasia and mental impairment, the gist of my paper would be largely to emphasize that which was emphasized yesterday in another connection, while we have all grades of mental loss in a theoretical sense, still practically it is necessary for us to study these cases as they present themselves. Pantomime, like defect in speech, is recovered from in varying degrees in the progress of a case of organic brain lesion. This point is one of great importance medico-legally, and should be borne in mind.

Functions of the Cord.—In the summer number of *Brain* Dr. Mott gives the result of observations and experiments he has made with the view of discovering the relations and functions of especially the ascending antero-lateral tract, commonly known as Gowers's tract in the spinal cord. In summarizing his results he states that the peripheral portion of the anterior and lateral columns consists in great part of ascending and descending cerebellar fibres. The former, the ascending, may be divided into a ventral and dorsal portion, and these should be named the ventral and dorsal ascending cerebellar tract instead of the antero-lateral and direct cerebellar tracts, the latter being the names by which they are now generally known. The ventral portion, it is said, may be completely divided in monkeys apparently without producing analgesia. The ascending cerebellar tract, he says, forms a connecting bridge between the superior vermis of the cerebellum and cells in the cord, the dorsal portion connecting the cells of Clarke's column with the dorsal part of the superior vermis, while the ventral portion connects certain cells of the cord with the ventral part of the superior vermis. Section of the antero-lateral column was found to produce much denser degeneration amidst the areiform fibres than could be accounted for by the slight injury to the direct cerebellar fibres. The extensive tract of degeneration corresponding to Gower's antero-lateral tract (which he thinks, with Löwenthal, should be called ventral cerebellar) has been traced in the monkey to the superior vermis by way of the superior cerebellar peduncle, forming in its course a curious loop over the fifth nerve.—*The Lancet.*

Therapeutic Application of Diuretin in Childhood.—Dr. Demme has given this substance to eleven children suffering from various forms of dropsy. He finds diuretin applicable in childhood from the end of the first year, a valuable diuretic and free from injurious action. The diuretic effect appears to be due to its action on the epithelium of the kidneys. The at times excessive dropsy of scarlet fever nephritis appears, after the expiration of the first acute stage of the nephritis, to be more quickly overcome by diuretin than by any other treatment. Dropsy from mitral insufficiency can generally, after compensation of the latter by digitalis, be quickly cured. The daily dose for a child two to five years old is 0.5–1.5 grams, from six to ten, 1.5–3.0 grams of diuretin best taken in 100 grams of water with the addition or ten drops of cognac and 2.5 grams of sugar. No cumulative action has been observed nor weakening of the therapeutic effect after several weeks' use.

Salol in Cholera.—The treatment for cholera proposed by Dr. Lœwenthal (first dose of two grams followed by hourly or half-hourly doses of one-half to one gram of salol), after experimenting with it in the laboratory and on animals, has been used on human beings with remarkable results. Dr. Gonzales, of Salvador, has used this treatment in 53 cases of cholera in one of the Philippine Islands with only three deaths (and these were already in the last stages of the disease when they came to treatment). The mortality under other modes of treatment is about 45 per cent.

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SATURDAY, SEPTEMBER 17, 1892.

DENTITION IN INFANTS.

A communication from the pen of H. C. WOOD, upholding gum lancing, and taking issue with the views of FORCHHEIMER, on the subject, as detailed in his recent book on the Diseases of the Mouth, has been copied very generally by the medical press of the country. This extensive republication may fairly be taken as expressive of a general approval of the position taken by PROF. WOOD.

Upon the questions of difficult dentition and gum lancing, the medical world has been for some years divided; the smaller party taking the modern view that dentition is a normal process and rarely if ever produces dangerous symptoms; the larger party holding that dentition is responsible for most of the ills that infants suffer from, and that gum lancing is its sovereign remedy. This latter view is one of our most ancient possessions, having come down to us from HIPPOCRATES. For centuries it remained unquestioned, and has consequently become firmly intrenched in both the professional and the lay mind.

JOHN HUNTER ascribed the following conditions to dentition: "Diarrhœa, costiveness, loss of appetite, eruptions on the skin, especially on the face and scalp, cough, shortness of breath, with a kind of convulsed respiration, and similar to that observed in whooping cough, spasms of particular parts either by intervals or continued, and increased and sometimes decreased secretion of urine, a discharge of matter from the penis, with difficulty in micturition, resembling symptoms of gonorrhœa in its violent form. The lymphatic glands are apt to swell at this time; if the child has a strong tendency to scrofula, this irritation will promote the disease. There may be many other symptoms with which we are not at all acquainted, the patients not being able to express their feelings."

Most, if not all of these symptoms are attributed to teething to-day.

Perhaps the earliest opposition to these views was by ROSEN VON ROSENSTEIN, in the middle of the last century; but his opposition was only partial. But WICHMANN in 1800 expressed the true status of dentition when he said: "It is to be hoped that, in the future, dentition will be called up only when it would be impossible to comfort the relatives with the impotence to designate the true nature of the disease, or to quickly calm the laity."

BILLARD, who was a careful student of pathological anatomy, particularly with reference to infancy, found nothing to impress him with the importance of dentition.

As we look over the list of symptoms given by HUNTER we find that many of them can be explained much more rationally by the results of modern positive observation. Diarrhœa has been shown to be intimately connected with fermentative processes; the respiratory symptoms are those commonly met in rickets, and in cases of pharyngeal adenoids; the convulsions are probably due to rickets; and the enlarged glands are tuberculous.

During the past summer this subject has occupied somewhat the attention of the Academy of Medicine of Paris. At the meeting of July 12, MAGITOT said "We wish that the so-called diseases of dentition, might be definitely erased from our medical nosology."

This brought a reply from M. PAMARD on August 9, who took the following ground:

1. All difficult dentition is accompanied by a disturbance of the health of the infant.
2. In cold climates, and in cold seasons, all difficult dentition is accompanied by reflex phenomena on the part of the respiratory organs. In warm climates and in warm seasons, all difficult dentition is accompanied by reflex phenomena on the part of the digestive organs.
3. The diseases allied to dentition in the infant, pursue a course, and present characteristics, which are clearly defined and well established.

These propositions were supported only by the old argument of coincidence, but the essayist was upheld by MM. LE ROY DE MERICOURT, HERARD, CHARPENTIER, PETER, and CONSTANTIN PAUL. He was opposed by MM. OLLIVIER, and HARDY.

In the study of this question, it is first necessary to separate dentition and gum-lancing. The first is a possible pathological condition, while the second is a therapeutic procedure.

We think it can be said without fear of contradiction, that there is not a single positive observation which has ever been recorded to prove that dentition produces general or reflex symptoms. It is undeniable that at the period in life when dentition is in progress, the infant is subject to certain disorders which occur much more commonly than at any other period of life.

If it could be shown that dentition was the only peculiarity of the infant, then its causative influence would be clear. But dentition is not the only peculiarity of the infant, and co-existing phenomena can only be classed as coincident. The most profound characteristic of infancy is that it is the period of most rapid growth and development of all organs; and careful observation of infants reveals numerous and great deviations from the normal growth and development in many instances. It will probably not be denied that such deviations are found most commonly in infants who have been artificially fed. In infants improperly fed, and this term is too extensive to attempt to define here, reflex manifestations are very readily produced, and it is not improbable that even a normally developing tooth may, in such an infant, be the exciting cause of trouble. We have seen infants, who would invariably have a bronchial attack immediately before the proruption of a tooth, but they have invariably been infants who were suffering from demonstrable deviations from normal nutrition. We have further found that after improving the nutrition of these infants, the further progress of dentition was unaccompanied by symptoms.

In such cases while it would be just as well perhaps to recognize the possible influence of dentition, its subordinate importance should be kept clearly in view. The great danger of teething is in the diagnosis, for when this is once made, the important underlying conditions are apt to be neglected, and permitted to progress to the death of the child.

Dentition is a convenient scape goat, and OLLIVIER has well said in the discussion just referred to: "During the nearly ten years that I have been connected with the Hospital for Sick Children, it has often happened that children brought to me for diseases of this type (teething) have been found to be suffering with an altogether different affection. It is very easy to invoke this diagnosis, but by passing in review the different organs and apparatuses, the diagnosis can easily be rectified."

But if dentition cannot be shown to be the great etiological factor of infantile disorders, it does not follow that gum lancing should be abandoned. It is difficult to overlook the numerous instances in which careful observers have thought they have obtained good results from its use, but it would be well also to bear in mind the many cases in which it has failed. As a therapeutic procedure it may have some value, but the indications for its use must be sought elsewhere than in a supposititious condition of teething. We should like to offer the following conclusions:

1. Before the diagnosis of "teething" is made, there should first be carefully excluded, organic disease of all organs, infection, intoxication, and perversion of nutrition.

2. Gum lancing as a therapeutic measure should stand on its own merits, and be studied apart from any supposititious and undemonstrable process of teething.

DISINFECTION THAT DOES NOT DISINFECT.

The value of any disinfecting process can be estimated only on the basis of experiments with the known germs of a given disease. The random directions which were more or less vaguely followed before KOCH's accurate work, involved not merely an enormous waste of labor and money but gave no guarantee that their object was really obtained, that is to say, that the germs were killed. Since the painstaking researches by KOCH and his pupils, work continued in this country by STERNBERG, PRUDDEN, and others, we known just how to destroy the germs of a given disease in the cheapest and most efficient manner. It is, therefore, a matter for severe censure if vague and inefficient measures are used by parties whose business it is to know what has been done in this line.

The frequent references of the public press to fumigations with sulphur show that many sins are yet committed in the practice of disinfection. No more flagrant instance however, of inefficient disinfection has come to our notice, than the directions issued by the New York Board of Health and reprinted without comment by the *New York Medical Record.*

A sulphate of iron solution in the strength of 1½ parts to 8 of water is advised for the disinfection of cellars, yards, stables, cesspools, sewers and so on. The accurate work above referred to has proven beyond doubt that this substance has feeble disinfecting powers at the best, and is altogether valueless in the manner recommended by the Board.

A zinc solution made by dissolving 4 ozs. of sulphate of zinc and 2 ozs. of salt in 1 gal. of water is directed to be used for disinfecting clothing, bed linen and so on. It has never been shown by any one that this has any disinfecting power whatsoever. In the latter part of the circular it is directed to boil clothing in this solution. While this of course is an efficient measure, what advantage is there in this fluid over pure boiling water? It has been shown that boiling soda solution acts more quickly even than pure water, but no such proof has ever been given of the efficiency of the zinc solution.

Corrosive sublimate solution 1 per 1000 is likewise recommended. But the strong germicide properties of this substance are counter-balanced by its tendency to form precipitates with albumenoids and other organic material and direct experimentation has shown that it is not a reliable agent for the disinfection of discharges. In reference to this as well as to the other substances mentioned in the circular we fail to find any mention of the importance of time in the process of disinfection. No one not fully familiar with *disinfection methods* could obtain reliable results by following the loose directions given.

The circular ends with a totally unjust praise of sulphur fumigation. Over and again it has been shown that sulphurous acid is not at all germicidal when dry and that even when moist it permeates larger articles very imperfectly. Under the best conditions attainable on a small scale in the laboratory sulphur fumigations are unreliable, while under the conditions existing in ordinary rooms the concentration of the fumes sinks speedily to such a level that the procedure is *totally valueless*.

CHOLERA.

The stringent quarantine measures carried into effect at our Nation's ports of entry, have been signally successful thus far in preventing the introduction or development of a single case of cholera in this country. This is a magnificent triumph for State medicine and sanitary science.

Unfortunately, there has been a considerable amount of friction between the National, State and local authorities, as to the powers of each in the enforcement and regulation of quarantine measures, clearly demonstrating the vital necessity for a Cabinet Officer of Public Health, whose rulings should have all the force and effect of enacted law.

Medical science has so far perfected our knowledge of the habits of the present threatening invader, as to enable the quarantine officers to hold the disease at bay. This has been done with such imperfect regulations as to involve very great hardship, sickness and death to many hundreds of people in the quarantined vessels. While these regulations are apparently justifiable, a single head with unquestioned power and authority, would be able to do all that is necessary, and with a show of mercy to the unfortunate passengers on quarantined vessels.

* * * * * *

Hamburg vessel owners cannot be too strongly condemned for sending their infected ships carrying thousands of passengers to our shores. The captains of these vessels seem to have never thought of the propriety of turning about, and carrying back their loads of living freight to the harbors from whence they sailed. If there are no laws for the penal punishment of such ship captains, such laws should be enacted as speedily as possible.

* * * * * *

The enactment by Congress, of stringent immigration laws, to limit, if not to effectually stop the use of American ports as a common dump for the use of the other nations of the earth will meet with universal approval.

We concede the ability of the American people to absorb, assimilate and utilize nearly everything that comes to them, but the line must be drawn, and this is *a good time to do so*. Let it be made so strong and plain that every Hamburg or other ship owner can understand it, and that without an interpreter.

EDITORIAL NOTES.

Errata.—On page 285, 17th line from top of first column the word *anterior* should be *interior* and 36th line from top of same column *ten* instead of *two* years.

Canadian Medical Association.—We have received from Dr. Herbert S. Birkett, secretary of the Canadian Association, an invitation to attend the twenty-fifth annual meeting at Ottawa. There will be a three-day session, on September 21 to 23, under the presidency of Dr. John L. Bray of Chatham. Dr. Donald Maclean of Detroit, has been invited to deliver the address in surgery. The address in medicine will be given by Dr. Graham, of Toronto. The customary arrangements with railway officials have been made, as shown by the following, taken from the members' notification: "Arrangements have been made with the Grand Trunk and Canadian Pacific Railways whereby members and delegates may obtain return tickets for one fare and one-third. Members and delegates will please bear in mind certificates entitling them to reduced rates *are to be obtained from the station agent at the place of departure*; one full fare is to be paid, and upon presentation of the certificate on the return journey, a ticket will be issued at one third of full fare."

The Re-vaccination of Soldiers.—In 1890, not one case of small pox was reported to have occurred in the British Army. This is evidence of the protection of re-vaccination against a malady once so fatal to armies, and still very disastrous where the measure is inefficiently carried out. Even in the armies and navies of Europe wherein the rules of re-vaccination have been administered vigorously mortality by small-pox has not been wholly eluded. The British Navy especially has found it a difficult matter to exclude mortality from this cause. The Prussian army has an enviable record in this regard, being able to show not more than 100 cases by death, from this cause, in a period of forty years.

Salophen in Rheumatism.—Dr. William H. Flint, of New York City, has had an opportunity to try this remedy at the Presbyterian Hospital, following out the suggestion of Dr. Guttmann of Berlin, made in 1891. The cases were chiefly acute attacks. The drug was administered in fifteen grain doses, put dry upon the tongue, and followed by a swallow of cool water, every three hours; and with sodium bicarbonate in ten grain doses thrice daily. Dr. Flint's report of the treatment may be found in the *New York Medical Journal* for July 30. There was a reduction of *dolor*, *rubor* and *calor* in five out of six cases on the second or third day of the treatment. In the view of the author, the dosage might properly have been larger and prompter relief obtained, but he was desirous of moving in a conservative manner. The heart's action was not weakened nor the stomach upset in any of these cases. There was no distinct effect upon the urinary excretion. No relapses and no cardiac nor pleuritic intercurrences were observed. From these facts the author believes that salophen ranks highly, along with other salicylates, as a potent medicine for acute rheumatism, and has this advantage, over some of the other drugs, that the new treatment does not enfeeble the heart, disturb the stomach nor produce smoky and albuminous urine. Judging from the experience of Dr. Flint the rheumatic pyrexia may be expected to fall to very nearly the normal within twenty-four to thirty-six hours after the first administration. If this experience finds confirmation in trials that are about to be made by the writer and others, the treatment will undoubtedly be "pushed" with the view of bringing down the "febrile movement" even earlier than has yet been done. The remedy appears to be among the safest of the new synthetic preparations.

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Case 1.—Embolism of the Left Central Artery of the Retina. Ophthalmoscopic Examination Twenty Minutes after the Obstruction. April 7, 1891. C. R., a man aged 26, while standing on the street conversing with a friend, without premonition, was suddenly completely blind in the left eye. The absolute character of the loss of vision is attested by the fact that after closure of his unaffected eye, he was unable to perceive the faintest ray of light from an electric lamp situated directly opposite to him. He came almost at once to my office and was examined (10:20 P.M.) twenty minutes after the occurrence. He was pale, complained of a feeling of faintness and vertigo, the pulse was 75, rather strong and bounding, and there was a coarse mitral systolic murmur transmitted to the axilla. Vision in O. D. 6÷6; in O. S. *nil.* The pupils were equal in size, the left unaffected by light, but acting consensually with the other. *Ophthalmoscope.* The oval optic disc, superficially pinkish-gray in tint, but distinctly pallid in its deeper layers, was surrounded by a partially absorbed choroid ring, within which the connective tissue ring could be traced all round. The coloring of the disc was visible through a semi-transparent, delicate haze which covered its surface and spread out into the retina in a circular area of about a disc's diameter; here the color of the haze was more decidedly gray. The macular region was invested with a similar, but more milky haze, and in the centre there was a typical *cherry spot.* These two banks of fog were separated by an area of unaffected retina. The entire arterial tree had very much dwindled, the vessels being represented by faint, rosy threads on which no light reflex could be traced. There was no anomalous vessel. The shrinking of the arteries perceptibly increased during the ophthalmoscopic examination. In contrast, the veins seemed larger, although as compared with the other side, they were smaller than normal. In the lower temporal vein a moderately rapid circulation was visible, characterized by small cylinders of blood separated by clear spaces which moved towards the disc, giving very much the appearance that would be produced by mixing air and colored water in a tube. Rapid and vigorous massage of the eyeball produced no effect upon the embolus and no material change in the ophthalmoscopic appearances, and a current of blood was not developed in the arteries by this manipulation. The ophthalmoscopic examination, which lasted for ten or fifteen minutes, was abruptly terminated because the patient fainted, or at least became so faint that he could not sit upright.

April 8, 1891. The patient was seen at his house under circumstances that made a prolonged examination with the ophthalmoscope well nigh impossible. The chief change which had taken place was the deepening of the milky-white infiltration of the retina. The cherry spot remained as before, the arteries were still small, but not so small as on the previous day, and the beaded circulation in the vein had ceased. There was now faint light perception.

April 10, 1891. The disc was quite pallid, in fact, it was materially obscured by the deepened milky infiltration, the peri-papillary portion of which had joined the macular bank, so that there was no intervening layer of unaffected retina.

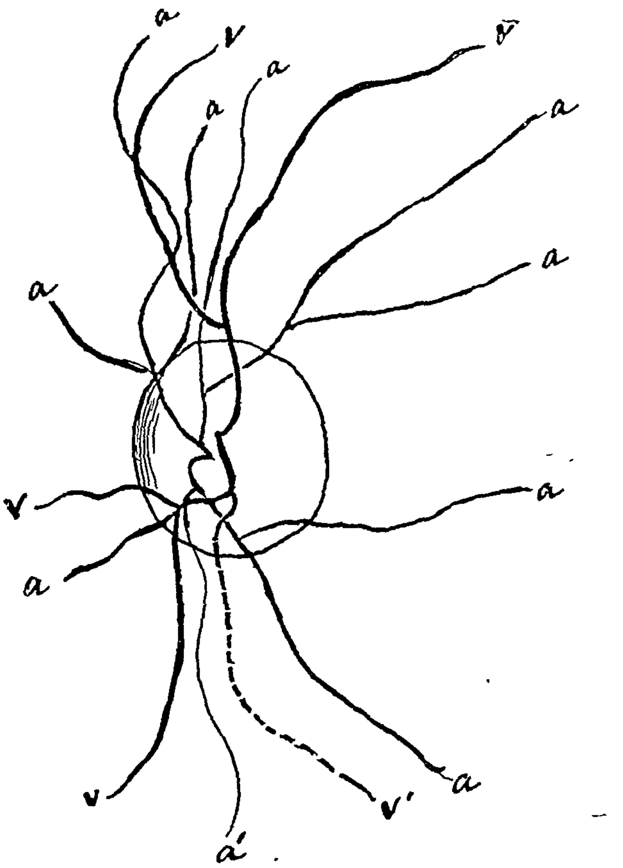

Figure 1.—Representing the retinal veins and arteries after the primary shrinking had given place to increase in diameter; a, artery; v, vein; a', artery which remained small; v', vein which exhibited beaded circulation. *No attempt has been* made to show the œdema.

April 20, 1891. The area of infiltration remained about may be expected to fall to very nearly the normal within twenty-four to thirty-six hours after the first administration. If this experience finds confirmation in trials that are about to be made by the writer and others, the treatment will undoubtedly be "pushed" with the view of bringing down the "febrile movement" even earlier than has yet been done. The remedy appears to be among the safest of the new synthetic preparations.

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Professor of Diseases of the Eye, Philadelphia Polyclinic, Lecturer on Medical Ophthalmoscopy, University of Pennsylvania, Ophthalmic Surgeon to the Philadelphia and Children's Hospitals, Etc.

Since 1859, when Von Graefe observed the first case in which there was almost instantaneous blindness from obstruction to the central retinal artery, until the present time, a great number of examples of this condition have been placed upon record. In 1885, Schnabel and Sachs (*Archives of Ophthalmology*, Vol. xiv, p. 298) were able to refer to 102 cases published to date, and in the years which have followed at least 32 additional instances have been added to the literature of medicine. Indeed, the entire subject has recently been reviewed in great detail in an elaborate monograph by R. Fisher, "Ueber die Embolie der Arteria Centralis Retinæ," Leipzig, 1891. In spite of these records, the explanation of certain phenomena seen in connection with this accident remains in dispute, and each new carefully observed case contains elements of interest worthy of publication, either because it places at our disposal additional facts, or because it tends to confirm former observations.

Case 1.—Embolism of the Left Central Artery of the Retina. Ophthalmoscopic Examination Twenty Minutes after the Obstruction. April 7, 1891. C. R., a man aged 26, while standing on the street conversing with a friend, without premonition, was suddenly completely blind in the left eye. The absolute character of the loss of vision is attested by the fact that after closure of his unaffected eye, he was unable to perceive the faintest ray of light from an electric lamp situated directly opposite to him. He came almost at once to my office and was examined (10:20 P.M.) twenty minutes after the occurrence. He was pale, complained of a feeling of faintness and vertigo, the pulse was 75, rather strong and bounding, and there was a coarse mitral systolic murmur transmitted to the axilla. Vision in O. D. 6÷6; in O. S. *nil*. The pupils were equal in size, the left unaffected by light, but acting consensually with the other. *Ophthalmoscope.* The oval optic disc, superficially pinkish-gray in tint, but distinctly pallid in its deeper layers, was surrounded by a partially absorbed choroid ring, within which the connective tissue ring could be traced all round. The coloring of the disc was visible through a semi-transparent, delicate haze which covered its surface and spread out into the retina in circular area of about a disc's diameter; here the color of the haze was more decidedly gray. The macular region was invested with a similar, but more milky haze, and in the centre there was a typical *cherry spot*. These two banks of fog were separated by an area of unaffected retina. The entire arterial tree had very much dwindled, the vessels being represented by faint, rosy threads on which no light reflex could be traced. There was no anomalous vessel. The shrinking of the arteries perceptibly increased during the ophthalmoscopic examination. In contrast, the veins seemed larger, although as compared with the other side, they were smaller than normal. In the lower temporal vein a moderately rapid circulation was visible, characterized by small cylinders of blood separated by clear spaces which moved towards the disc, giving very much the appearance that would be produced by mixing air and colored water in a tube. Rapid and vigorous massage of the eyeball produced no effect upon the embolus and no material change in the ophthalmoscopic appearances, and a current of blood was not developed in the arteries by this manipulation. The ophthalmoscopic examination, which lasted for ten or fifteen minutes, was abruptly terminated because the patient fainted, or at least became so faint that he could not sit upright.

April 8, 1891. The patient was seen at his house under circumstances that made a prolonged examination with the ophthalmoscope well nigh impossible. The chief change which had taken place was the deepening of the milky-white infiltration of the retina. The cherry spot remained as before, the arteries were still small, but not so small as on the previous day, and the beaded circulation in the vein had ceased. There was now faint light perception.

April 10, 1891. The disc was quite pallid, in fact, it was materially obscured by the deepened milky infiltration, the peri-papillary portion of which had joined the macular bank, so that there was no intervening layer of unaffected retina.

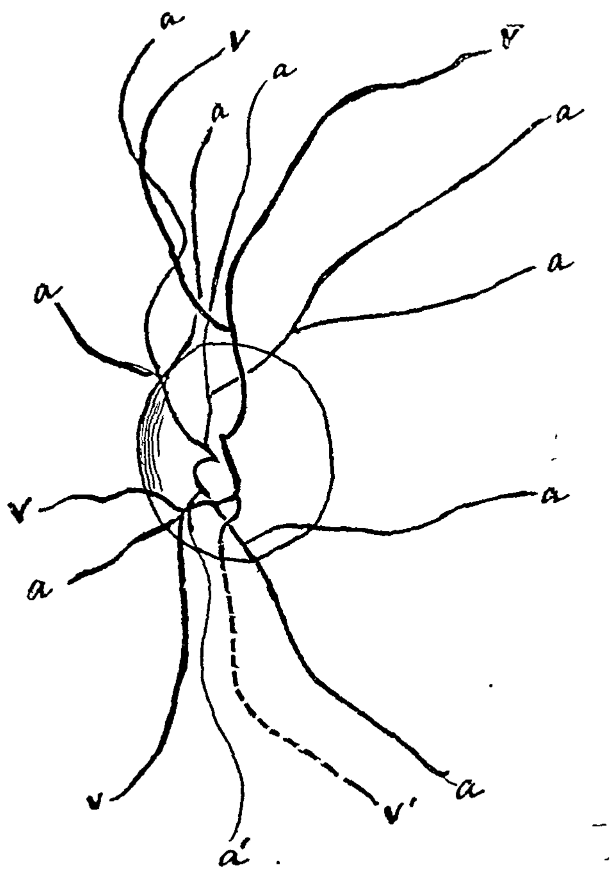

FIGURE 1.—Representing the retinal veins and arteries after the primary shrinking had given place to increase in diameter; a, artery; v, vein; a', artery which remained *small*; v, vein which exhibited beaded circulation. No attempt has been made to show the œdema.

April 20, 1891. The area of infiltration remained *about* the same. The retinal veins were full, and of apparently normal size, while the arteries had materially increased in diameter, and, with the single exception of the inferior temporal artery (which was only a faint thread), could be traced for some distance out into the retina, but were finally lost in the foggy infiltration. (See Fig. 1.) The light perception in the centre of the field was a little more marked. The patient was not seen after this for nearly a month.

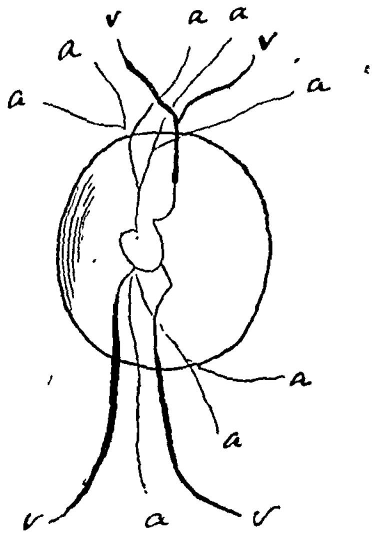

Figure 2.—Representing the retinal veins and arteries 35 days after the occurrence of the embolism. The arteries are mere threads, and are lost soon after crossing the disc. The veins are dark and large in contrast, except in the venous circle on the disc; a, artery; v, vein.

May 12, 1891. The oval optic disc was of a greenish pallor, entirely devoid of capillaries. All the arteries were faint threads scarcely distinguishable upon the disc, and lost entirely, or traceable only as minute whitish lines, after they had passed the margin for less than half a disc's diameter. (Fig. 2.) The veins were also shrunken, but in contrast to the arteries appeared darker than normal. The fog-like infiltration previously described had entirely disappeared, while in the macula was clustered quite a mass of cholesterin crystals. There was not the faintest ray of light perception.

Further data in regard to the clinical history of this patient and his previous cardiac conditions are contained in the following letter received from his physician, Dr. William Pepper: "The cardiac lesion in C. R.'s case evidently dates back a number of years. I was first consulted about it in 1887, when I found a marked mitral regurgitation with a strong systolic murmur and a moderate degree of hypertrophy, not more than enough to effect good compensation. This condition has continued to the present time. He has been subjected to a great deal of care and physical, mental and emotional strain. The heart has borne it fairly well. During this winter there was some increasing anæmia, with a strong tendency to rapid action of the heart and to general weakness of the system. There was also slight feverishness from time to time. This was much improved by complete rest for short periods. In the summer of 1890, when in a location quite free from malaria, he had a series of severe chills, followed by a high fever of short duration. There has been a slight return of this during the present month, May, 1891. Are these truly malarial, or can they be connected with slight points of ulceration which might favor the detachment of a fragment of vegetation? In favor of the malarial view is the fact that the chills have yielded promptly to full doses of quinine."

Some time after the embolism, or in the early summer of 1891, this patient developed a popliteal aneurism, for the cure of which he finally underwent the operation of ligation of the femoral. Afterwards an aneurism appeared in the course of the brachial artery. Preceding the development of these aneurisms, he had an attack of rheumatic fever, or at least an attack which was thus diagnosticated.

Remarks.—The sudden onset of the blindness, the classical symptoms of acute anæmia of the retina from obstruction of the central artery, and the cardiac and vascular disease in this patient, render it more than probable that the lesion was an embolus. Some interest attaches to the opportunity of observing the ophthalmoscopic changes so soon after the lodgment of the obstructing body. The picture did not materially differ from that which has often been described, but it is interesting to note how rapidly the œdematous change may occur in the retina after it has been deprived of its blood supply. The formation of two areas of infiltration separated by a band of comparatively unaffected tissue, is not readily explained, unless it be assumed that this region was not deprived of its blood supply.

The second point of interest in this case is one that has been noted in other instances, namely, that although the primary effect was to obliterate vision absolutely, and that at first the retinal arteries dwindled away to mere threads, after a time, beginning about seventeen hours after the lodgment of the embolus, the arteries increased in size, and so long as twelve days afterwards, with the exception of the inferior temporal artery, remained of considerable magnitude. During this period of the increase in the size of the vessels, there was faint light perception; in fact, on the day immediately following the accident, the patient declared that he could tell an object passed in front of his eye. Gradually, however, this return of sight disappeared, the arteries shrank, and the eye became absolutely blind.

Schnabel and Sachs have dwelt considerably upon this point, and enforced their observations with one autopsy. According to them, after a *partial* embolism of the trunk of the central artery, there are two causes which interrupt the circulation: one is the embolus itself, and the other is the spasmodic contraction of the walls of the artery. The latter gradually disappears, and then the vessels become filled again without there having been any change in the character of the embolus itself. The ultimate deterioration of vision, or its complete loss, depends upon the fact that there is no change in the position of the embolus. These observers believe that there is only one symptom which will decide whether an embolus partially or completely obstructs the flow of blood. It is partial if there is fulness of the vessels, or if there is circulation of the blood as indicated by the movement of the blood in the right direction seen after the embolism has occurred. The presence or absence of vision is of secondary importance in this respect.

Case 2.—Embolism of the Right Central Artery of the Retina. Examination Five Months after the Accident. Partial Preservation of the Temporal Field of Vision. S. H., a man aged 72 years, presented himself for examination October 22, 1890, with the following history: In May, 1890. when feeling perfectly well, with no premonitory symptoms, and while standing at his dressing case in the morning, he suddenly appreciated that the sight of the right eye was blotted out. No exact data are at hand from which to decide the completeness of the loss of vision, but from his own account and from that of his most intelligent family physician, it is probable, for many hours at least, that the obliteration was absolute. No one was at hand to make an ophthalmoscopic examination, but the patient was put to bed, purged, given sedatives, and his temple was leeched. After a time he began to see slightly, but did not find it convenient to consult any one until the date just mentioned.

He had always been a healthy man until about the time of the embolus, when his doctor discovered some sugar in the urine. This appears to have been a temporary condition, and when I examined him there was neither sugar, albumin, nor tube casts. There was high arterial tension; the temporal and radial arteries were distinctly hard to the touch. There was no increase in the area of cardiac dulness; the first sound was somewhat muffled and the second sound clanging. There was no murmur.

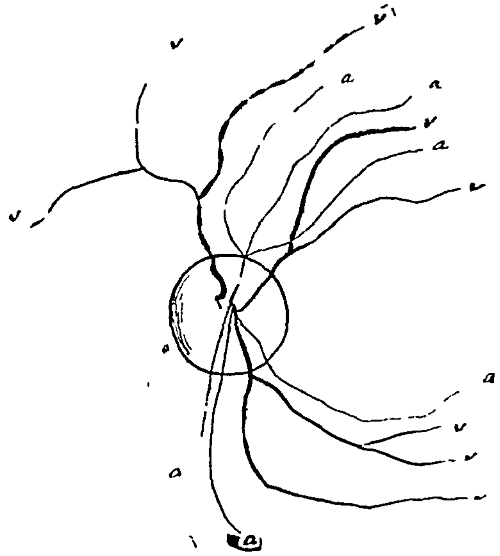

FIGURE 3.—a, artery; v, vein; v', beaded vein. A diagrammatic sketch. No vessel passes to the temporal side, and fine, transverse branches are absent. T, temporal side; N, nasal side.

Ophthalmoscope. The optic disc was nearly round,entirely atrophic, being of a greenish-white color. The arteries, where they could be traced, were mere threads, and none could be followed to the temporal side. The veins in contrast were dark, and the upper temporal vein, or at least the main branch of it, was beaded, dark, well filled portions being divided from each other by entirely collapsed areas. The finer tranverse branches could not be seen anywhere. (Fig. 3.) The vision in this eye consisted in object perception in the temporal portion of the field. In the left eye the vision, after correction of a slight astigmatism against the rule, was 6÷6. There were faint opacities in the anterior cortex of the lens, an oval, normally colored optic disc, and no changes in the central circulation.

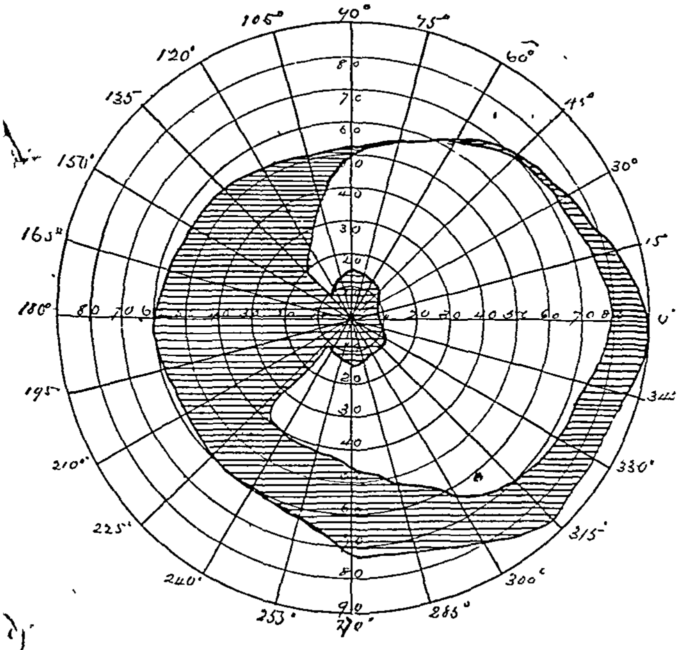

FIGURE 4.—Diagram of the field of vision of Case 2. The shaded area represents where vision was lost; the unshaded area, where there was preservation of form-sense.

The field of vision of the affected eye is represented in the diagram. (Fig. 4.) The shaded portion indicates the area in which vision was lost and the white portion the preserved field.

It will thus be seen that the greater portion of the nasal field is wanting, and that the centre of the field of vision is sharply cut out by an area thirty degrees in its long diameter, which on the nasal side joins the general obliteration of the inner portion of the field of vision. In the area of preserved vision light-sense and form-sense remained; color-sense was wanting.

Remarks.—The case which follows has many features analogous to those in the one just reported; indeed, it may be looked upon as a study of the symptoms which were probably present in the early stage of the affection in Case 2. For this reason I will defer the remarks until I have quoted Case 3.

Case 3.—Embolism of the Left Central Artery of the Retina. Examination Fifteen Hours after the Accident. Preservation of a Small Patch of the Temporal Field. Mrs. E. E., aged 66, presented herself for examination May 1, 1892, at about 2 o'clock in the afternoon. Fifteen hours before she appreciated that she had suddenly become blind in the left eye. There was a slight aura preceding the extinguishment of sight, characterized by what the patient called a "glimmering before the eye", probably some form of photopsy. The patient was in good health, had suffered no recent illness, but had done a good deal of stooping on the previous day, particularly in the act of gardening.

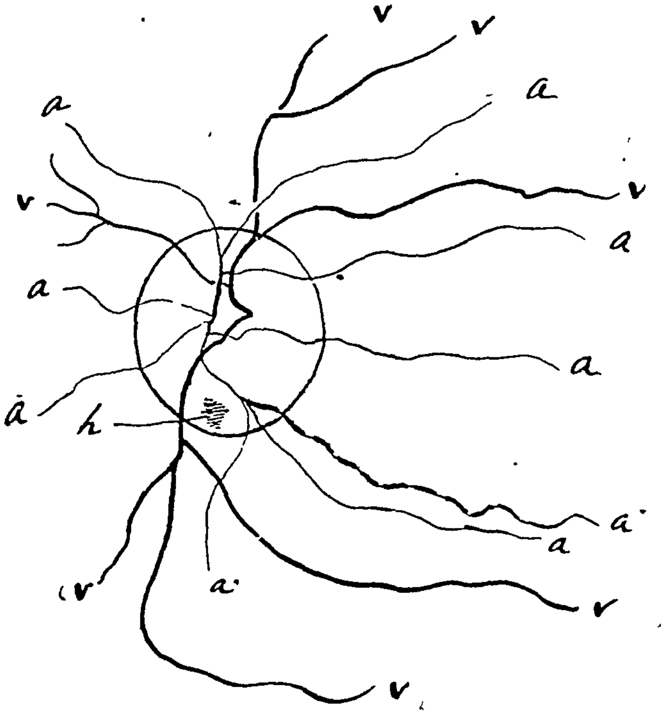

FIGURE 5.—v, veins; a, artery; a', beaded artery, carrying blood of darker color than that in the other branches, and resembling a vein; h, hæmorrhage in the disc.

When examined the vision amounted to faint light perception in a small area of the temporal half of the field. The optic disc was oval, distinctly gray or gray-red in color; all of the arteries were subnormal in size, but of a fairly normal color, with the single exception of a large branch of the inferior temporal artery, which, from its point of origin from the main trunk near the lower margin of the disc, as far as it could be followed in its curve along the lower temporal retina, was beaded, and appeared as if a series of constrictions had been placed around it. Moreover, in contrast to all of the other arteries, it carried much more darkly colored blood, so much so that at the first examination it was thought to be a vein. (Fig. 5.) There was a faint milky haze, most marked between the macula and the disc, and the fovea was represented by a dull, brownish-red spot showing through the fog. There was a small hæmorrhage on the disc lying between the inferior temporal artery and vein.

May 2, 1892. A careful map of the field of vision was obtained with the result which is exhibited in the diagram. (Fig. 6.) It will be observed that a small patch remains upon the temporal side, and that the centre of the field of vision is sharply cut out, in fact, that the general appearance of the map is closely similar to the one obtained in the previous case. In the area of preserved field light-sense remained, but form-sense and color-sense were absent. The ophthalmoscopic appearances were about the same as on the previous day.

May 16, 1892. It is unnecessary to give the daily record of the ophthalmoscopic appearances in this case; suffice it to say that gradually the haze disappeared and the disc became more and more atrophic. Today the following note was made: Disc uniformly gray and devoid of finer capillaries; only one small macular branch visible and one small vessel on the nasal side of the papilla; the veins are about the same size as the arteries, in fact, the upper temporal veins are smaller than the arteries, but both systems are diminished in size. The beading of the lower temporal artery continues. The hæmorrhage on the disc has been absorbed.

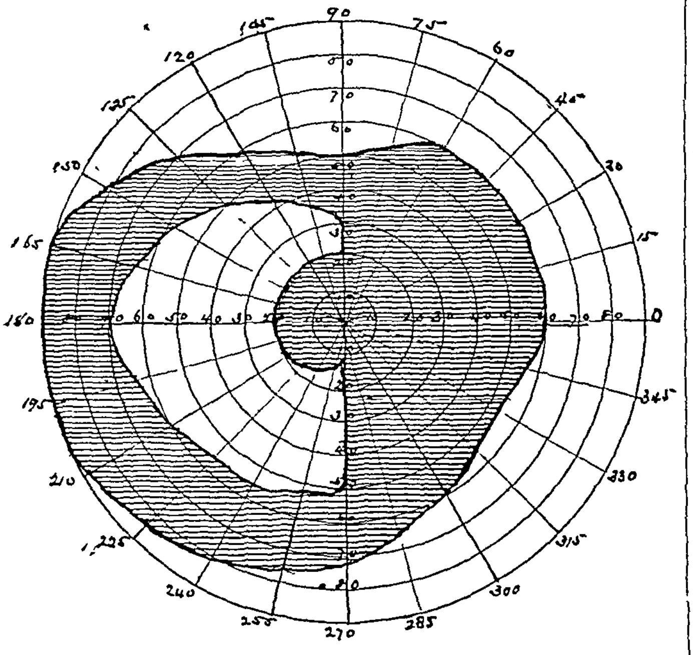

FIGURE 6.—Diagram of the field of vision in Case 3. The shaded area represents where vision was lost, the unshaded area, where there was preservation of light-sense.

May 24, 1892. Still greater atrophy of the disc. The upper temporal artery for about a disc's diameter above the papilla is obliterated, and then continues as a fine thread. The other vessels are about the same.

The family physician, Dr. James B. Walker, has kindly reported upon the condition of the heart as follows: An enlarged left ventricle, with atheromatous vessels, but without marked valvular lesion. The urine, of a specific gravity of 1022, was free from albumin and sugar. At the last visit, on May 24, the preservation of the small patch of vision upon the temporal side continued.

Remarks.—In Case 2 the diagnosis of embolism, in contradistinction to thrombosis of the artery, is not quite so clear as in the first case which was reported, but may fairly be assumed to have been the lesion on account of the absence of a previous attack of temporary blindness in the affected eye, a simultaneous attack of temporary blindness in the unaffected eye, and giddiness, faintness, or vertigo—symptoms which Priestly Smith has taught to be somewhat diagnostic of thrombosis. In addition to the curiously constricted appearance of the upper temporal vein, the interesting feature of this case resides in the map of the field of vision, and the preservation of an area upon the temporal side in which form-sense remained.

In Case 3 there is some question between embolism and thrombosis, as the patient's general condition was such that the latter lesion might readily have formed. However, the usual ophthalmoscopic signs of embolism were present, and those which have been supposed to indicate thrombosis were absent. Small hæmorrhages along the course of the vessels have been noted in embolism; indeed, in one instance recorded by Knapp (*Archives of Ophthalmology and Otology*, Vol. I) there was extensive infarctus. A hæmorrhage upon the surface of the disc is, perhaps, more uncommon.

The dark color of the inferior temporal artery, so that the hue resembled that of venous blood, probably indicated slowness of the circulation. This phenomenon has been noted by V. Jaeger, Schneller, and is referred to by Schnabel and Sachs. In Schneller's case the arteries for some time had the appearance of narrow retinal veins.

The chart of the field of vision in this case closely resembles that of the former example. In each there was an almost exactly similar patch of the temporal field, in which in the one, form-sense, and in the other, light-sense was retained. In a number of instances of embolism, presumably of the central trunk of the artery, an eccentric (temporal) patch of the visual field has remained unobliterated, moreover, in the absence of any visible cilio-retinal vessel. Fischer, who discusses this phenomenon at some length, suggests several explanations. In his own patient, a portion of the retina which surrounded the papilla like a girdle retained its sensitiveness to light, and, according to this author, owed this preservation of function to a slight blood supply from ciliary vessels through the smallest cilio-retinal branches. It is possible the same explanation is applicable to cases in which the area of retained vision (light-sense or form-sense) occupied a larger portion of the nasal retina and caused the partial preservation of the temporal field.

Another explanation, discussed by Fischer, is that the diminished flow of blood in the central vessels after embolism is less marked in the areas near the papilla than in the more remote sections of the retina. In other words, it is assumed that all portions of the retina do not suffer equally from the diminished supply of blood, and that a portion of the nasal retina in part retains its functions. In a case of so-called hæmorrhage into the optic nerve observed by Magnus, fourteen days after the sudden blindness the patient began to see to the outer side. The exterior half of the retina and the macula remained blind. Magnus considered this condition of differential diagnostic import between embolism of the central artery of the retina and hæmorrhage into the optic nerve, and on the strength of it excluded embolism. Fischer, who quotes this case, is not in accord with Magnus as to the value of this point.

In Case 3, there was no apparent difference in size of the vessels passing to the nasal and the temporal side of the retina to account for the retention of a patch of functionally active retina. In Case 2, no small transverse branch was to be seen, and no vessel passed to the temporal side of the retina. Probably, as Fischer admits, neither of the theories which have been suggested is satisfactory, and we are not in position to explain the reason why a part of the nasal retina retains, partially at least, its function. Evidently, in some manner the blood supply of this portion of the retina is not so decidedly obliterated as elsewhere, or else by a collateral circulation it receives nourishment, although in an imperfect manner.

Discussion.

Dr. Edward Jackson, Philadelphia:—As bearing upon the question of embolism or thrombosis, I have in mind a case in which the history pointed toward the latter. A young man otherwise apparently healthy, gave a clear history of repeated attacks of impairment of vision in the affected eye. These attacks had occurred for some years, at first at long intervals, then more frequently. The final attack occurred on a Sunday morning while he was reading the newspaper. He said the sensation was exactly similar to that experienced on former occasions. He stopped reading and sat for a few minutes waiting for it to pass off but the trouble did not pass off; and instead, vision rapidly grew worse until light perception was lost. I saw him twenty-two hours after the occurrence of the trouble. Light perception was then entirely lost. Œdema of the retina was very marked. The margins of the disc were obscured and the retinal veins contracted irregularly. There was no movement of the column of blood. The arteries were not materially altered in appearance. The patient subsequently remained in good health until the occurrence of an attack of typhoid fever from which he died.

As bearing upon a point in reference to Dr. Ayres' case, I have in mind a case which came to me last November with extensive hæmorrhage in the region of the macula and a second hæmorrhage in the neighborhood of the optic disc, neither causing complete loss of light perception. They had occurred without any apparent predisposing cause. The patient was inclined to ascribe the occurrence to exposure to tobacco smoke, which he never could stand. He had been in a room filled with smoke until he suffered from great nausea and discomfort, but had not vomited. He went on the street and coming to a street lamp noticed something wrong with the sight. There has been almost complete recovery with no recurrence of the hæmorrhage in six months, and the man is perfectly healthy in all respects, so far as can be judged by repeated careful examinations.

Dr. S. C. Ayers, Cincinnati:—A curious thing is that so many cases of embolism or thrombosis occur in the morning. Many patients wake up and find the eye blind. This was the case in the three instances which I have reported. I am certain that we have some cases of genuine embolism from the fact that the arteries remain permanently obliterated. In regard to the case reported, I am sure that it could not be embolism. What it was, unless thrombosis with temporary obstruction, I do not know.

"IMPURE" PARETIC DEMENTIA AND ITS FORENSIC RELATIONS.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Many European and some American alienists have drawn the line between insanity attacking an intact organization and attacking one already disordered by heredity or disease. What is true of insanity is also true of paretic dementia. This certainly becomes tinctured with certain features according to the organization it attacks. The organization attacked, may already be the victim of a constitutional disease like phthisis in which case the emotional exaltation of the spes phthisica becomes exaggerated with the emotional state of true paretic dementia, permeated, however, by a suspicional phase. The claim has been made that these are not paretic dementia plus the individual defect, but new types of the paretic dementia. Fournier, for example, went so far as to claim that syphilis produced a pseudo-paretic dementia. I have already shown that exceedingly valid grounds exist for refusing to admit the existence of such a type.[1] Bonnet[2] has recently has recently sustained my position in a memoir crowned by the French Medico-Psychological Association.[3]

Regis has gone even further than Fournier, for he claims that beside the type of paretic deméntia which becomes developed in its own time, and which is the true paretic dementia, there are other cases which occur unexpectedly, some time before, others after the ordinary period, which may be said to range between the ages of twenty-five and sixty-five years. The first may be designated as premature paretic dementia, the second as late paretic dementia. Cases before the age of twenty-five years, are very rare, and only a few cases are recorded coming on before the age of twenty. The premature type, unlike the ordinary type, has always a powerful etiological factor, such as heredity, syphilis, traumatism, saturnism, or general or local diathesis. These causes appear to determine in these cases an early predisposition, and prematurely to place the brain in those conditions in which it is found in mature life. Premature paretic dementia has a slower progress and a longer duration; it is more frequently subject to remissions, and is susceptible of a more or less permanent cure. To the designation premature and to the positiveness of the position here taken, I have elsewhere[4] shown that most decided objections exist. The symptoms which Regis has grouped under this title may appear at any age, and are due to the organism attacked. A careful examination which I made of the subject some years demonstrated ago to me,[5] that this was the true explanation of the facts cited by Regis in support of his position. Whatever be the etiological factor, the organism attacked tinges the paretic dementia, and not the etiological factor. The normal organization furnishes the typical paretic dement. The organism in which a neurosis has been set up by phthisis, lues, gout, rheumatism, traumatism, lead-poisoning, insolation, heredity, ataxia or other causes, furnishes atypical cases of paretic dementia presenting many features in common.

Klippell[6] claims that among the arthritics, as among other diathesitics, types of paretic dementia may occur; pure paretic dementia, paretic dementia with complicatory neuroses, and finally the pseudo-paretic dementia found in diathesitic conditions.

These atypical cases simulate those of other psychoses at various times during their progress.

Foville[7] states for example that, during the last few years, cases of paretic dementia have been noticed in which delusional states added to muscular agitation assumed alternately the form of maniacal exaltation and melancholic depression, and it has been proposed to class these as paretic dementia a double form. The chance of error that we most often meet with, is the possibility of confounding the period of excitement of circular insanity, with the beginning of the expansive period of paretic dementia. The resemblance may be very great, both as regard bodily and mental symptoms. When intellectual disorder is added to the maniacal exaltation of circular insanity, it frequently assumes the form of the grandiose delusions so frequent in paretic dements. Even when there is no delusion properly so called, the resemblance may be very great. The mind deranged with enterprises, the opinion of self in the intellectual, artistic and poetical domain, exaggerated; the optimism generalized, in a word accompanied by impulses to theft, to excesses of all kinds, to the most compromising actions, might produce the appearance in the two psychoses of almost identical characteristics. It is well known, that certain paretic dements at the onset of the excitement may not present any speech or motor disorder. On the other hand, in certain cases of circular insanity, the close connection between the emotions and the cerebral activity may impart to the speech a degree of tremulousness, very difficult to distinguish from that of paretic dementia. Finally, as Falret has shown, in a few cases of circular insanity, pupillary derangements, apoplectiform and epileptiform attacks have been noticed.

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[1] Alienist and [illegible] 1883.
[2] An [illegible]
[3] Ar[illegible] 1882.
[4] Amer. Lancet, Vol. VII.
[5] Alienist and Neurologist, 1883.
[6] Revue de Medicine, 1892.
[7] Brain, Oct., 1882.

A pyschic element of great value would be the inception of dementia which is common enough at the onset of paretic dementia to be considered constant. But this is often so disguised in consequence of the general state of excitement, that it is almost impossible to ascertain its existence.

Regis[8] thinks he has found a criterion in the nature of the patient's feelings. He claims that the paretic dement is really kind-hearted, generous and even prodigal, desirous of being agreeable to everybody, and spreading around him the treasures of a common benevolence. The patient suffering from circular insanity, is wicked above everything, cantankerous, ironical and clever in injuring everybody. We are far from denying this is often so, but we have known paretic dements, who were caustic and mischievous, and patients suffering from circular insanity, who are generous and beneficient.

Gilles claims,[9] that circular paretic dementia bears the same relation to circular insanity, that exalted and depressed periods of paretic dementia do to mania an dmelancholia; circular paretic dementia is especially frequent in hereditary cases. The remissions occur with great suddenness and apparent completeness. In the depressed state intellectual and organic failure with trophic disorders occur, in the expansive period, temporary amelioration is likely to appear, eschars, congestive attacks, the menstrual period and acute diseases form the transition of one phase into another. Circular paretic dementia may appear suddenly after one or two attacks of simple insanity, or in the course of true circular insanity.

The alternating type is most frequent. The duration of the psychosis is longer than the ordinary type of paretic dementia.

How difficult the diagnosis between circular paretic dementia and circular insanity is, may be judged from one of my cases. A patient who has a strong hereditary taint, is regarded by me as a paretic dement, and by so excellent alienists as Drs. Dewey and Bannister. as a circular lunatic.

The types of paretic dementia due to lues, traumatism, insolation, phthisis, lead poisoning, heredity, etc., but particularly the hereditary types, are exceedingly likely to assume this circular character.

The rheumatic and gouty types have prolonged remissions, which may, as Spitzka, Regis and myself have observed, pass into recoveries. In my experience, the other types do not recover as Regis claims, but there is a long-lasting querulent, paralucid condition, in which the patient while retaining to a limited degree his former exalted opinion of himself conceals this under resentment evinced in lawsuits or fault finding. The exalted opinion is often the result of a delusion of memory. The same is true of the depressional delusions, which are sometimes so thus retained, as to affect business transactions. One of my patients with decided hereditary stigmata, was attacked by paretic dementia. His periods of exaltation and depression alternated twice or thrice and disappeared, leaving a paralucid querulent pessimistic state. He has an inward conviction, from what were evidently memory delusions based on this former depression, that every thing was going to go wrong with his business. Under the influence of this state he sold out some stock which, by a "bear" movement induced by a lawsuit, had been forced down in value. This law-suit and the resultant "bear" movement, had been foreseen by him when he purchased the stock. The stock rose above par within a week after he sold it. The remission gave place to a period of depression, followed by one of emotional exaltation during which he was committed to an insane hospital. Suit was brought by his conservator to annul the sale of the stock. The jury under the instructions of the court decided that the sale should stand. This decision was in full accord with repeated decisions of the Illinois and Iowa Supreme Courts, which held that persons of unsound mind are to be held bound by an executed contract or conveyance where the transaction is fair and reasonable, and in the ordinary course of business, and where the mental condition of the party is unknown to the second part, and the parties cannot be placed in status quo ante.

In another case with hereditary taint, complicated with lues, there occurred periods of paralucid querulency, emotional depression, and exaltation. The patient previous to the demonstrable onset of the paretic dementia had contracted to have two houses built. The contractor, after making several sub-contracts, failed. The sub-contractors demanded payment of the paretic for work which the contractor had been previously paid. This was refused. The patient was sent to an insane hospital, whence he was discharged in a paralucid querulent interval. Despite my advice to the contrary, he was placed in charge of his property. In a short time he verbally agreed to pay the contractors their bills. Owing to a new period of exaltation requiring hospital treatment, these promises were not fulfilled, whereupon suit was brought. The jury decided for the plaintiffs for the same reason as in the previous case.

These impure types are hence of peculiar forensic interest, since they nullify the ordinary prognosis as to the duration of remissions in paretic dementia and of the disease itself.

A prominent clinical feature of these cases is the temperature. Rottenbiller[10] has found the paretic temperature is subnormal, and that extraordinary daily variations, without apparent cause, are frequent (in one case the temperature rose from 97 F. in the morning to 102.6 F. in the evening, and fell again to 88 F. the next morning); these characteristics are present in the early stages of the disease and in remissions.

This in my experience has been almost exclusively the case with the premature paretic dements. In these, the asymmetrical axillary temperature to which I called attention[11] about a decade and a half ago is peculiarly frequent.

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[8] L' Encephale, 1881.

[9] Medical Standard, June, 1892.

[10] Allge. Zeitschrift f. Psych., 1885.

[11] Jour. Nerv. and Mental Disease, 1878.

Regis has sufficiently albeit too strongly covered the point of age. The luetic, gouty, rheumatic, traumatic and hereditary types occur at any age. The luetic cases resulting after the age of 65, are of rather long duration. In three such cases, the patient reached the age of 73, but each resided the whole period in an insane hospital. In three hereditary cases, occurring after 65 (one male, two females), of less duration (6 years); three sons were also afflicted at from 17 to 23 with paretic dementia. The sons died ere their parents from intercurrent complication due to trophic changes: the spinal symptoms were especially predominant. In epileptics who became paretic dements at the climacteric period the psychosis ran its usual course, and rarely lasted three years after its onset. In ataxics however, the remissions were frequent and protracted, but querulency existed.

The Hebrew race, as Spitzka[12] several years ago pointed out, seems to be peculiarly liable to this type. Heredity and lues prepare the soil which this psychosis attacks. Pure paretic dementia is, in my experience, rare with Hebrews.[13]

The forensic results of this type of paretic dementia, have already been shown. This psychosis constitutes at times no little financial danger to communities from the precipitation of panics.

DISCUSSION OF ELECTRICAL EXECUTION.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY A. D. ROCKWELL, M.D.,
OF NEW YORK.

While I do not believe that the best use to which a man can be put is to kill him, yet all will agree that if the law will kill, let it kill decently. It is evident that the sentiment against hanging and in favor of some method quicker and less repulsive is strengthening and that other methods will sooner or later replace the rope everywhere. Mr. Edison while in Paris during the exposition gave his opinion so positively in regard to the efficiency of electricity that the medical section of the French Academy of Sciences aided by Marcel Duprez, a prominent electrician, have had the matter under careful investigation. There is always opposition and friction attending changes for the better, and this change has been no exception to the general rule. The whole tendency of our civilization is, however, in the direction of humane methods in dealing with criminals and that form of execution which is quickest and least repulsive should be adopted. It is a mathematical impossibility that any human being receiving in proper form a electrical current of lethal energy should appreciate even for a fraction of a second the slightest pain. It has been ascertained that the brain is one-twenty-fifth of a second in recognizing an impression, and one-twenty-eighth of a second in telegraphing that an impression has been received, and as nerve force travels only about 100 feet a second, while the velocity of the electric current is millions of times greater than this, the brain has absolutely no time to appreciate a sense of pain. As between electricity and certain other methods of capital punishment, it is not altogether clear that the former is the best that could be suggested. The guillotine and the garote are practically instantaneous and painless in their action and attended with only a fraction of the paraphernalia and expense of the method now adopted in New York State. There is, however, an apparent brutality attending both these methods that repels, and a mutilation and shedding of blood, which public opinion in this country seems unwilling to tolerate.

The action of poison is open to none of these objections, and it seems somewhat singular that it has not more strongly commended itself to the philanthropic mind seeking simpler and more humane methods in the legal taking of human life. But as between electricity and the rope there can, it seems to me, be no question. Let us suppose that it had been customary to execute by electricity instead of by hanging, and that some one in the supposed interests of humanity should suggest that the former method be abolished, and the latter substituted; that a method practically instantaneous and painless, unattended by mutilation and without any distressing outward manifestations of pain, be replaced by one which usually fails to extinguish life for ten or twelve minutes, which in many cases it is reasonable to believe is attended with torture, and where the convulsive manifestations are horrible to witness—such a suggestion could not have the slightest claim for serious consideration, and as a matter of fact would never be offered.

After the passage by the legislature of the State of New York, of the law substituting electricity for hanging in the execution of criminals, there arose a terrible storm of opposition that apparently had for its basis extensive commercial interests. It was claimed by the opponents of the new method, that electricity was by no means certain to destroy life without the infliction of great pain, and the popular mind was agitated by repeated assertions of the possibility and probability of repulsive disfigurement by the heat and chemical action that would necessarily be developed in the use of currents of such great power. To determine these points and to advise the State as to the best methods of procedure, a commission was appointed consisting of Dr. Charles Mac Donald, Chairman of the State Commission in Lunacy, Prof. L. H. Laudy of Columbia College, and the writer, who both at the Edison Laboratory and at the various prisons of the State, experimented largely upon animals, and tested many devices and methods for the application of the current. There could be no charge of cruelty in these investigations for in no single instance was there any evidence that the slightest pain was inflicted.

The largest animals, such as horses and a bull, instantly succumbed to an electric pressure of one thousand volts, while dogs and calves were as readily destroyed by five and six hundred volts.

But one impact of the current was found necessary, for death was instantaneous in every case.

Immediate examination after the opening of the circuit invariably failed to elicit the slightest respiration or heart beat, and careful and persistent efforts at artificial respiration conducted by Dr. Fell of Buffalo with the latest and most approved appliances were without avail.

In view of the fact thus satisfactorily demonstrated that one thousand or at the most fifteen hundred volts would instantly kill any animal large or small, we very naturally inferred that any human being would succumb even more readily, but to make assurance doubly sure, it was recommended that not less than 1,500 or 2,000 volts be employed in the execution of criminals. To our great surprise therefore it was demonstrated at the first electrical execution, and confirmed in every subsequent attempt, that it was far more difficult to kill a man by electricity than any ordinary domestic animal however large. In the only execution which the writer attended, when four criminals were successively subjected to the electric stroke, the first contact of twenty seconds with a voltage of 1700 left its victim apparently lifeless with the exception of a slight fluttering of the pulse and what appeared to be a slight expiratory effort.

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[12] Jour. of Nerv. and Mental Disease, 1880.

[13] Review of Insanity and Nervous Diseases, Vol. II.

Because of these faint evidences of vitality it was decided then, and has been customary since to repeat the shock once and sometimes twice. That the victims were, however, in every instance so thoroughly devitalized by the first shock as to preclude the possibility of resuscitation, and that every vestige of consciousness was instantly obliterated, admitted of not the shadow of a doubt. In these cases a man's brain acts in two ways, and I should say that the reasons for this increased strength of current necessary in the case of a human being were both psychical and physical. In the first place, the man knows what is coming, and every nerve and muscle is tense with involuntary resistance. There is a mysterious likeness between nervous force and electric force; not a resemblance exactly, but a something about each which science has yet to fathom.

I have no doubt that this nervous tension operates directly to impede the action of the electricity, while the secondary effect is physical. The body conducts electricity by virtue of its saline solutions.

Now fright drives the blood away from the surface to the central portions of the body.

When a man is placed in the chair he is necessarily terribly frightened, and the result is that the surface tissues are unnaturally dry, and hence inferior conductors. With an animal these influences do not prevail, but the most striking confirmation of the probable truth of this suggestion lies in the fact of the greater readiness with which life is extinguished in men from accidental contact with electrical energy.

Even where the contact has been incomplete and imperfect, linemen have been instantly killed with electrical potentials no greater than those employed in judicial executions. When a man thus accidentally comes in contact with the current, his will or nervous force is in a passive state and offers no resistance to the action of the current, while the surface of the body is usually flushed with the exertion of work, and in the highest state of conductivity. Notwithstanding the efforts of a united press to exaggerate results, no one who has once witnessed a properly conducted execution by electricity can fail to commend it as a most humane method as compared to hanging. Aside from the fact that a human life is being taken by violence, there is little in connection with the execution that is revolting to the senses. After the first convulsive movement as the current is received, every muscle is simply tense and motionless until the current is broken, when relaxation takes place and the man is to all intents dead.

It will be recollected that the press raised a great outcry against the use of electricity, not only because of its supposed inefficiency, but because of what was described as repulsive mutilation by burns and scalds. While the degree of heat generated, and the influence exerted upon the superficial tissues, varied in the different cases, according to the position of the electrodes and the density of the current near the points of contact, in no instance was there any such repulsive disfigurement as has been intimated, and in all but one or two the effects produced were so superficial and slight as to be unworthy of comment. It cannot be denied, however, that owing to the limited area through which the tremendous voltage required has to operate, and the immense resistance offered to its passage, there occurs a remarkable drop in potential and an astonishing development of heat, which without the exercise of the most intelligent and careful supervision might result in such severe burning as to bring under public condemnation a method which thus far commended itself to all eye witnesses.

But it is not voltage alone that kills, but its rate of expenditure in the body as expressed by ampères, and the time consumed in its expenditure as expressed by the volt ampère seconds indicating the measure of the heat developed during the action of the current. As stated by the distinguished electrical expert, W. J. Jenks, "none of these factors are well settled as yet in their relation to the energy actually required to cause instant and painless death. By death, I mean now not alone cessation of consciousness of a perfectly healthy human being in an interval too brief for thought to measure, and the establishment of conditions which produce gradual and final expenditure of the stored nervous energy of the brain and the subordinate centers of distribution of vital force—such as the pneumogastric nerve and the spinal cord. I mean also, total paralysis of all the vital organs, and of the nervous centers by which they are directly or indirectly vitalized, and by which the muscles of the extremities are actuated, so that when the current is broken there can be no reflex action of the muscles, such as would indicate the presence of residual life energy, or a possibility of its resuscitation."

The question which physicists must determine is how with a comparatively low voltage the same number of ampères that are expended upon the periphery and therefore in a measure lost, could be made to act exclusively on the centers of life and nervous activity, instantly devitalizing them, while leaving no outward manifestation of the terrific power employed.

It has been asserted that the subject of executions by electricity is one with which the physician should have nothing to do, and vigorous protests have been made against the propriety of allowing the subject of legal executions to be discussed in our medical societies.

In arguing that the function of the physician is to save life and not to be in any way connected with devices that destroy—it is forgotten that in one of the departments of our art, our noblest efforts are enlisted in taking, for the purpose of saving life; and when death is inevitable the physician is at hand to soften the transition from visible time to invisible eternity. When the law, therefore, decides that some new and better method be adopted in the disposition of those against whom its heaviest penalty has been decreed, who but the educated physician is to decide upon the humanity of such change, and who but he should be selected to advise the State as to the proper technical methods of procedure.

Whatever is worthy in action is proper in discussion, and as one of the advisory commission, appointed by my State, in the interests of the best methods of execution by electricity, I have felt that our work was never along more truly professional lines, or more in the interests of humanity.

ELECTRODES, AND THEIR APPLICATION IN ELECTROCUTION.

Read in [illegible] he
Forty-t [illegible]

BY GEO. E. FELL, M.D., F.R.M.S.,
OF BUFFALO, N. Y.

So long as the death penalty is regarded by the law as a necessity, so long will electrocution be the most humane method of executing it. This statement is made only after the most careful observation, extending some years over this inquiry, and after having witnessed the execution of William Kemmler and Joseph L. Tice at Auburn, N. Y. The term "humane" in this connection has a wider application than is generally considered. In the execution of the death penalty, the carrying out of the saddest mandate the law requires of its officers, the sense of *duty* has nerved them to their work. Even should they feel that the law may be overstepping its bounds in taking human life, it must be conceded that for the good of the greatest number its behests must be carried out. It should be remembered that the ends of legal justice are usually reached by slow processes; that malice is not a factor in any proper judicial decision, but justice mainly, when the decisions are reached through honest legal process. These facts should and do go a great way towards supporting the executive officer in the discharge of the most trying ordeal which an officer is called upon to perform. Humanitarian factors in the execution of the death penalty enter not only into the effect upon the culprit, in the prevention of physical or mental suffering, but also to a marked extent upon the immediate executors of the law. Electrocution when properly carried out offers the readiest, least troublesome of preparation, least horrible and most humane method of carrying out the death penalty. While the results of the application of this method have heretofore demonstrated these statements to be true, as compared with other known methods, there is yet, I believe, chance for improvement in the methods utilized, so far as the application, at least, of the electrodes is concerned.

The electrodes first suggested, in the Harold P. Brown chair, which was described in the Kemmler inquiry, consisted of a sponge adjusted upon a plate of copper to fit upon the sole of each foot of the culprit, this forming a double electrode. The other, a somewhat similar contrivance or cap, of suitable metal, placed over the skull, with a rubber cap to fit tightly to retain the moisture in connection with the sponge. No special detail of application of moisture or fluid to wet the electrodes was devised—possibly because the first chair built upon this plan (which now lies in the basement of Auburn Prison) was not considered suitable for the purpose it was intended to fulfil. The chairs in use really have fewer objectionable features than the one just mentioned, in that they conform to the ordinary shape and peculiarities of the chair commonly used.

The next arrangement, which was the Kemmler chair, provided one electrode to apply to the spine and to the upper portion of the skull, to carry out the suggestions I first made in connection with this subject, "that the apparatus to be used should be arranged to permit the current to pass through the centers of function and intelligence in the brain." (See Report of Commission to investigate and report the most humane and practical method of carrying into effect the sentence of death in capital cases, page 84.)

The last method of carrying into execution the death penalty by electricity, so far as the electrodes are concerned, was the application of a wet sponge to the thigh and the forehead of the culprit.

These three different applications of the electrodes may now be considered. It must be conceded that the objective organ, or organs, which must be influenced to produce the most rapid death, consist of the heart, the center of the circulatory, the brain and spinal cord, the centers of the nervous, systems. If this is conceded we think there should be no difficulty in arriving at the best location of the electrodes which will the most efficiently destroy the activity of these different portions of the organism. What should be taken into consideration, of course, is the extent of resistance offered by the tissues through which the current is passed, the desideratum being to apply the electrodes so as to offer a minimum of resistance together with a maximum of influence of the current upon the organs mentioned. The application of the electrodes to the soles of the feet calls for the passage of the current through the entire extent of the limbs before the vital organ, the heart, is affected by it. The application of the electrode to the thigh also presents a greater extent of tissue than is necessary, in my opinion, and in reality is not so satisfactory for other reasons. In fact both these methods prevent the greatest intensity of the current from being expended upon the heart. In other words, the conductor represented by the cross section of the whole body, cannot permit that intensity of current that would be presented were the lower electrodes applied more closely to the cardiac region. When it comes to the application of the electrodes to the head we will find that there is valid objection to the forehead electrode as used at Sing Sing, and in the case of Joseph L. Tice at Auburn. Understand, that we are endeavoring to find the best theoretical points of application of electrodes. We must admit, of course, that electrocution may be carried out successfully without placing the electrodes in theoretically the best positions. Given a sufficiently powerful electric current applied to the hands, or to any vital portion of the body, its influence is sufficiently powerful to destroy life. But what is desired is to do this in the best way from all standpoints, standpoints of convenience in application as well as of the completeness of the work with the absence of reflexes or distortions of the body, which might seem objectionable. As to the forehead electrode, it is only necessary to look at a longitudinal section of the encephalon or entire head to see that much of the current may be expended without influencing the cerebrum or the cerebellum, except through dissemination to the head as a conductor. Whereas, were the electrode applied to the top of the head, as in the Kemmler execution, there could be no question as to the course of the current. Furthermore, it is important to destroy the reflexes of the spinal cord; this would be better accomplished by the application of the head electrode to the top of the head than to the anterior portion. Then, again, I think there is no question but that the application of the electrode to the top of the head can as easily be carried out,or more easily (as in the Kemmler execution), than can the forehead electrode (strapping) method used at Sing Sing. The objection to the application of the electrode to the spine, as in the Kemmler execution, was simply that it was not so easily accomplished as probably, to the thigh; yet theoretically the location was the more desirable.

A still more desirable location, however, both theoretically, or from the physiological standpoint, and also from the standpoint of results in experiments upon lower animals (in which it has been demonstrated that the nearer the electrode is placed to the heart, the more suddenly its action is made to cease), would be the application to the abdomen, in the epigastric region. (See Dr. Tatum's experiments in my report on the "Influence of Electricity on Protoplasm," President's Address before the American Microscopical Society,in this city,August, 1890.) The size of the electrode (within reasonable bounds; it should be, of course, quite large, say 16 to 24 square inches of surface), would probably have very little effect upon the results. The object, however, it seems to me, is that the full intensity of the current be applied to the cardiac region, the force being then expended directly upon the heart before great dissemination of the current is produced by the great cross section of the body in this region. By none of the means heretofore used would it be possible so markedly to influence the heart by the passage of the electric current. The abdominal application, also,could be more readily accomplished. The electrode could be applied before the culprit left the cell, by a strap around the body, the electric connection being made after he was placed in the chair, and the saturating of the electrodes carried out by the same irrigating measures (fountain syringe) used at Auburn at the Tice electrocution. We think there is no question that that result would be more satisfactory, if it were possible to have anything more satisfactory than the execution that took place when Tice was suddenly ushered into eternity at Auburn.

I cannot close this article without referring to the unjust, impracticable and unreasonable statements urged by the opponents of electro-execution; and I have a very great degree of satisfaction, after witnessing the humane taking-off of Tice and Kemmler, in that I have been a strong advocate of a method which so effectually takes away from the execution of the death penalty so many of the terrors that formerly characterized it. I again most emphatically repeat, "that it can be truthfully stated that electro-execution, inspired in the interests of humanity, and with the methods employed, has demonstrated the truthfulness of all that has been claimed by its advocates. If criminals must be executed, there is no method so certain and ready of applicability, if the apparatus is properly provided." (See Proceedings of the American Microscopical Society, August, 1890.)

Discussion.

Dr. Robert Newman, New York City:—The subject dwelt upon in the papers of Drs. Rockwell and Fell with regard to electrocution, is one of the most important that can command the attention of the medical profession, as well as every humanitarian. I do not think these two papers should go by unnoticed. They should be thoroughly discussed and widely read when published. I move, therefore, that this Section ask the Committee on Publication for an extra supply of copies of these two papers, to be distributed largely over the whole world. If they are published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, they will have a limited number of readers.

I shall never forget, when Kemmler was executed, how the press maligned electricians and said electrocution was a failure. At the time I was in Berlin. These ideas ought to be dispelled. I do not know of anything that has been more maligned than electricity, both by the ignorant and by malicious persons; consequently we ought to do something to dispel erroneous ideas and tell the truth. If electricity has been maligned, electrocution has been much more so, particularly in Germany, and by men who ought to know better. If several thousand copies of these two papers were sent to editors all over the world, it would be the practical thing to dispose of this matter.

This idea of feeling pain during electrocution cannot be too soon dispelled from the public mind generally. The sooner it is done the better it will be for science and humanity.

Dr. George E. Fell, Buffalo, N. Y.:—Regarding Dr. Rockwell's reference to the electric current being much more rapid than the nerve current, I will say that this subject was brought up in the National Electric Light Association at Niagara Falls in 1889. Professor Anthony urged that we could not claim that the question of velocity of the electric current would settle the point as to whether death by electricity "would be painless or not." The electrical executions appear to have settled it conclusively and to uphold the generally accepted belief that the speed of the electric current through a living human organism is very many times faster than the nerve current, which has been estimated by Helmholtz to be about 111 feet per second.

One of the most interesting features in connection with electrocution is this, if a post-mortem be made shortly after you find that a great portion of the blood in the muscular tissue is forced into the visceræ of the body. The kidneys, liver, lungs and spleen and brain are remarkably congested. On cutting into the muscular tissues post-mortem we find that very little blood will flow. This instantaneous tonic contraction of the muscles and almost immediate excessive congestion of the viscera is in itself enough to produce death. The Kemmler execution, which was so horribly mutilated by the press of the country, was just as good as the Tice execution, except the current was kept on longer than was needed.

Regarding the question of linemen being instantly killed, I have often-times questioned whether that is so. A man in Buffalo caught both electrodes of a dynamo and was said to have been killed instantly, but it was found on enquiry that he breathed a little afterwards. The Tice electrocution occupied 45½ seconds from the time the current was turned on until the execution was over. I believe in all instances in making and breaking the current even if it be an alternating one. The effect on the body is much more marked by thus doing than by the continuous current, unless of very high voltage. A current of five or ten seconds will not produce heat enough to amount to anything. and I believe if the current is made and broken at intervals of from three to not more than five seconds the time of execution can be cut down one-half less than the Tice case.

Dr. A. D. Rockwell, New York City:—Mr. Chairman: I have very little to say in addition to what I have already said in my paper. Theoretically, perhaps, the position of the electrodes as suggested by Dr. Fell may seem correct, but practically I believe the method as adopted to be preferable. In the second series of executions, one electrode was placed on the forehead, and the other on the calf of the leg.

In the Kemmler case, one electrode was placed at the small of the back where it is difficult to obtain a perfect adaptation, and where the conduction is by no means all that can be desired. With the application of the electrode in such a place, I ascribe in a measure the somewhat unsatisfactory result of this first test of the efficiency of electricity in judicial executions. Kemmler himself was aware of the imperfect contact and voluntarily pushed himself back upon the electrode.

We want, of course, to get as near as possible to the centers of vital force, but with the better knowledge that experience has given, it does not seem to me that it will make much difference where the electrodes are placed. Taking into consideration the possibilities suggested in my paper, of expending the force of the electric current on the central nervous system rather than upon the skin, thus avoiding the danger of burning, against which such an outcry is made, currents of greatly increased voltage can be used. With such tremendous pressure complete devitalization would take place, so that there would remain absolutely no residual life energy.

ON THE REFLEX THEORY IN NERVOUS DISEASE.

Read in the Section of Neurology and Medical Jurisprudence at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY L. BREMER, M.D.,

OF ST. LOUIS, MO.

The subdivision of practical medicine into a great number of specialties has not proved an unmixed boon to either science or the welfare of humanity. If one peruses the reports of the specialists and becomes familiar with the trend of their work, one is struck with the peculiar antagonism that exists among the respective representatives or followers of the several special branches. The chief interest of their reports generally centers in the observation that by successfully treating a disease of the organ to which *they* pay special attention, symptoms in distant organs which other specialists claim as their domain, have vanished; the additional remark being generally made that the patient had been treated by such and such a specialist of another order without any benefit.

A few such results, misconceived as a rule, as to their true nature and import, will render the young specialist enthusiastic; from an enthusiastic he is apt to develop into a fanatic, who builds dogmas on misunderstood facts.

One of the chief causes of these aberrations from the true intents and purposes of practical medicine is to be found in the erroneous conception and interpretation of reflex action in disease.

Ever since the custom became prevalent among physicians, especially those practicing specialties, to look upon localized lesions as the causes of disorder in distant organs, the theory of the reflex origin of disease took a firm hold of the professional mind, to the benefit of our science and patients in many, to the detriment of both in many more, instances.

By misuse of the term, and its misapplication to practice evil results have in the course of time by far out-classed the positive good it might have wrought within proper and legitimate boundaries.

The introduction of the term "Reflex" in medicine dates back to the works of Descartes who first applied it to the involuntary closing of the lids which takes place when an object is approached to the eye. The doctrine of the reflex was later on enlarged and elaborated by Marshall Hall, Grainger, Johannes, Mueller, et al. The essence of this law is, as is well known, the response by muscular contraction of certain parts on the application of a stimulus to certain sensory or sensorial nerves. The irritation, then, is reflected as a *movement in a corresponding muscular area*, and motion is essential as a result of indirect stimulation.

The physiological experiment gave a clew to the understanding of many formerly inexplainable morbid phenomena; spasmodic affections and other motor disturbances could be traced to certain local irritations and were in many instances relieved or cured after such local troubles had been remedied.

But when the profession split up into specialties which subsequently spread and developed to present proportions, the theory of reflex action in disease was soon called to aid in the explanation of morbid conditions, which had absolutely nothing to do with that law.

The fact was lost to sight that a true reflex presupposes a *reflex arc* composed of an *afferent* nerve, a *central* nerve cell, and an *efferent* nerve. By ignoring the proper definition of reflex action great confusion was created by mixing up "Associated Sensations" or what I would like to call for brevity's sake "Co-sensation" (Mitempfindung) with reflexes. Thus quite a voluminous literature of "Reflex Neuroses" sprang up, treating of local or general, sensory or sensorial, even mental affections, caused, as alleged, by local maladies.

This mistake has had a peculiarly disastrous effect on gynecology. Five years ago I read an article on this subject before the St. Louis Medical Society, published in the *Weekly Medical Review*, 1887, p. 8 fl., under the head "Gynecology in Neuroses and Psychoses."

The remarks on this matter, made at that time, were based upon observations in private and hospital practice (St. Vincent's Institution for the Insane, St. Louis). Abridged and slightly modified they are about as follows:

Without denying the possibility of nervous and even mental derangement arising in women from comparatively trivial diseased conditions of the general organs, such as catarrh, cervical laceration or stenosis, uterine displacements or ovarian disorder, I agree with those who believe that the frequency of such cases are vastly overestimated, and that the prevailing practice of treating slight local affections with a view of bettering or curing such morbid conditions as hysteria, neurasthenia and allied diseases of the nervous system, are generally nugatory and injurious.

These injurious results of local treatment consist in aggravating the nervous symptoms. and creating a state of chronic invalidism, the prevailing condition among the women of the better classes in our days, the cures, if they do take place, being generally ascribable to other factors, principally suggestion. In many instances such alleged cures are apparent rather than real. There are women who claim that they are benefited by every local application and frequent the physician's consulting room year in and year out.

Gynecological treatment has a corrupting and debasing influence on some neuropathic and psychopathic females who develop a craving for local appliances and manipulations, a speculo-mania so to speak, frittering away their time in the doctor's office, which they have not to spare, and which they ought to devote to their homes and children. From this neglect of the household duties, domestic infelicity and subsequent divorces are apt to result. The remote causes of the latter are in not a few instances traceable to the gynecological chair. A woman who meets with disappointment in married life is now-a-days inclined to seek relief in the gynecologist's office, as she would formerly apply under like conditions to her spiritual adviser. All her thinking becomes concentrated on her womb, her egotism (generally hysterical) assumes immense proportions, she poses as a martyr to imaginary or quasi-imaginary disease, and in the worst cases worships her doctor as her hero and benefactor.

Meanwhile, the continued doctor's bills are far from having a soothing influence on the mind of the disgusted husband who sees through this farce and conceives an inextinguishable loathing for his wife. The finale of the drama is enacted in the courts under the designation of cruelty, neglect and incompatibility of temper.

Another significant fact is, that married female morphinists are almost invariably patrons of the gynecologist's office at one time or another in their career, and that they are willing to, and often do undergo, all kinds of surgical operations on the womb and its appendages, operations which generally, to say the least, are superfluous. This craving for surgical interference about the genital sphere, sometimes painful and dangerous in character, may seem incomprehensible and even incredible to some, but it is a fact familiar to those who have had opportunities to observe or treat this class of drug victims. The medical history of such patients generally contains a passage which runs like this: The operation was successfully performed and the local trouble is cured, *only* "a little nervousness," in the language of the operator, remains. This small amount of persisting nervousness was, however, sufficient to land the patient at some sanitarium.

Specially harmful and uncompromisingly to be condemned are gynecological examinations and treatment for minor ailments in young unmarried women who, following the fashion of the day, and having their heads full of misunderstood physiological notions, apply to the doctor for local treatment, or still worse, are persuaded into it against their will by weak-minded and fanatical women whose special object in life seems to be to hunt up victims for "local treatment," as it is termed *par excellence*.

Without hesitation, I go the length of saying that gynecological treatment under such circumstances is a crime, that its effects upon the mind of the young woman is that of defloration. Her moral tone, her manner of judging things is altered and lowered; with the consciousness of there being even a shadow of a flaw on her virginity, those subtle qualities disappear which constitute the charm of girlish innocence; her mind is polluted, she is unfit for marriage. and all this, because her doctor happens to hold the opinion that by manipulating the uterus he can cure neuroses. It is the bounden duty of the rightly thinking physician to shame such patients out of gynecological treatment and to help, by so doing, to restore them to health, reason and decency.

But the greatest mistake founded on the reflex delusion, and a very prevalent one at that, is gynecology in mental diseases. Having been connected with an institution for the insane for a number of years, I have had ample opportunity of watching the results of such uterine manipulations. There is scarcely a female between twenty and forty-five admitted to the asylum that has not been treated for womb diseases as the probable cause of insanity, and in case this has not been done, the attack coming on too suddenly, the suggestion is made by the friends or relatives that womb disorder is probably at the bottom of the mental trouble. Somehow it is a consoling thought to relatives of insane women to shift the blame from the brain to the womb and ovaries, especially where the cloud of heredity hangs over the family, and the doctor who pronounces the case "mere nervousness" dependent on womb disease is pretty sure, for a time at least, to meet with approval on the part of the female members of the family, and in case the patient, after a protracted local treatment is committed to the insane asylum, everybody is satisfied that everything that could be done, has been done, whereas in reality everything was done to intensify the trouble and render a cure, if not impossible, at all events highly improbable. It is a maxim in psychiatry, even more so than in general medicine, that the more recent a case presenting itself for treatment, especially institution treatment, the better the chances of recovery. These chances are impaired and sometimes destroyed by the worse than useless gynecological procedures. I say worse than useless, because in many instances they do positive harm. In the predisposed they precipitate the mental cataclysm, they kindle the flame of insanity that was slumbering beneath the embers, they confirm and fix morbid thoughts in grooves that cannot be smoothed out and turn them into channels that refuse to be dammed up.

I know of patients who were thus treated for apparently curable melancholia at home until mania supervened, and others whose delusions were fostered and deepened by local treatment; syphilophobia, imagined pregnancy or fancied destruction of the womb being the result. Frequently the doctor's personality enters into the delusion of such cases, an occurrence which gives rise to very annoying, unpleasant and easily misinterpreted situations.

In the same article I alluded to the unscientific and barbarous practice of spaying women for nervous disorders, having apparently their starting point in the ovaries.

Much had been said and written on this topic before I read that article, and much has been said and written against the practice since by neurologists. Although there has been a healthy reaction in some quarters owing to the greater spread among physicians of neurological knowledge, the evil is, I believe, even greater to-day than it was five years ago. While at the medical centers the truth has at last dawned upon those who specially treat women's diseases, and while it has been solemnly stated that women have other organs than wombs and ovaries that may be at fault and need looking after, and whilst there is a laudable attempt in those quarters to *unlearn* certain things in gynecology, as it has been put, the seed of the evil has been sown too long and too thickly as to be hampered in its spread and growth by some isolated anathemata that may occasionally be hurled against the abuse by a few authorities. Too ma[illegible] useless gynecological operations have been [illegible]nessed and admired by the present generation [illegible] physicians, and their minds have been too powerf[illegible] impressed *ex-cathedra*, for more than two decades, with the alleged beneficial results of gynecological procedures, to make room for the hope of any amelioration in the near future. The mind of the general practitioner is chronically infected with the delusions taught for years by books and in the colleges, and the speculo-mania among women prevails epidemically, having spread from the cities, its former exclusive seat, to the country population. It is a hopeful sign, however, that advanced and enlightened gynecologists are of late moving in the right direction.

What has been said of gynecological practice as being to a very considerable extent based on delusions, holds also true, though not nearly to the same extent, in the specialty of genito-urinary diseases in men. The well-known chains of nervous symptoms attending diseases of the bladder, prostate and kidneys in neurotic men have also, in many quarters, given rise to the idea that such local conditions caused the nervous disorders reflexly. Aside from the fact that at best only motor disturbances, such as spasms of voluntary and involuntary muscles (vessels, intestines) could be called reflex, many of the nervous manifestations are co-sensory, whilst the most of them (at any rate their persistance) are the result, but not the cause of them.

Mistaken notions about the reflex action have in this particular field of medicine, too, wrought an immense amount of harm, and the modern nuisance of illegitimate orificial surgery is one of the parasitic growths that luxuriates on, and at the expense of, legitimate genito-urinary surgery.

The irritable bladder, the irritable urethra, prostate, rectum, or perineum with distant associated nerve complication, affections which do not call for operative interference, any more than the irritable breast or the irritable heart, have all more or less unnecessarily been tampered with from ignorance of the fundamental teachings of neurology. Causes of functional central and coarse systemic nerve-disease (tabes e.g.) that were locally treated as vesical or rectal affections, abound in the personal recollection of neurologists, and all these improper practices were done on the reflex theory.

Another phase in the evolution of the theory of, and practice on, the law of reflex action, illustrating the blending of reality and imagination, truth and fiction, is the relation of ocular defects with certain neuroses. Since it became known that visual abnormalities often accompanied nervous diseases, oculists tried to establish a causal connection between eye-affections and neuroses, the same as gynecologists, aurists, rhinologists, dentists, etc., did before. The reflex theory gained here a new field for application.

The startling statements of the remarkable results obtained in the treatment of chorea, epilepsy and hystero-epilepsy and neuroses in general by the mere correction of ocular defects called forth the famous inquiry of the Steven's Commission. The investigation ended, as might have been foreseen, like a regular doctor's quarrel, or a theologian's dispute, each side being more confirmed than ever in the correctness of their respective positions. In perusing the history of this "Stevens' Commission" there is one point that strikes one more forcibly than any other: the patience and perseverance of both patient and oculist. Month after month elapsed without any material benefit being appreciable in the patient's condition, and yet they continued to present themselves with a regularity and endurance worthy of a better cause. The tenacity of such confiding sufferers finds its amalogon only in gynecological patients and in persons afflicted with chronic catarrh of the middle ear, who are specially hopeful and continue treatment to the last.

As with the latter classes the enthusiastic physician who treats them is in the enviable and impregnable position of the Indian medicine-man who prophesies rain until it finally does rain. The remissions and intermissions in all functional nervous diseases, and for that matter, those due to organic trouble; also, are powerful allies of the doctor who has the knack of holding nervous cases by performing small and insignificent operations on them, however indifferent they may be.

There is an old and undisputed maxim: "The world wants to see performers." This is especially the case in the neurotic world. Nothing, however, produces such an overwhelming and occasionally such a beneficial effect on the fertile, though morbid imagination of the sufferer from nervous disease, as an instrument of precision and its application. The nerve crank will swear by the oculist's "Phorometer" as he will testify to the wonderful effects of magnetic water. He will continue to have his eyes' muscles clipped by the oculistic impostor and marvel at the great advances which have been made in medicine.

I know of cases of incipient insanity that were treated by such muscle-clipping; it is needless to say with what result.

Certainly the aid of scientific and conscientious ophthalmologists to neurology and to internal medicine generally has been of the greatest advantage, and has established many valuable points touching the relation between eye and brain, and this knowledge has benefited many sufferers who, without this aid, would have continued in chronic martyrdom. I myself bear cheerful testimony to the prompt relief of some functional nerve disturbances following the use of properly selected glasses and other rationally directed ophthalmological treatment; my protest is aimed at the ocular "reflex" humbug that started in New York and bids fair to imbue the profession with the same erroneous and harmful ideas as have obtained in other specialties.

A great stir in the medical world was created when Hack announced in 1882, that he had cured a great number and variety of neuroses by cauterizing diseased portions of the nasal mucous membrane, removing small polyps and relieving catarrhal conditions generally. The firmness and precision of his reports gave a great impetus to the study and treatment of nervous affections having their supposed origin in diseased conditions of the upper air-passages. More and more the nose, throat and larynx were inspected, for the *causa nocens* in nerve diseases, and soon there was a galaxy of brilliant reports adorning laryngological literature, dazzling and perplexing the unsophisticated observer.

In Hack's report, and still more in those of his followers real reflex affections, such as asthma, continued sneezing, spasms of the glottis, and coughing, were again mixed up with associated neuroses, neuralgias and headaches, *e. g.* After the enthusiasm has subsided a little, and especially after the electric search-light of neurological inquiry had been turned on a number of these marvelous cures, it became evident that many of the successes were only temporary and that spastic seizures and sensory disturbances would return after shorter or longer abeyance, in spite of the removal of the local affections.

Like in other therapeutical booms, together with the unavoidable reaction, cases are now being reported where grave and permanent neuroses have resulted from cautery of the upper air-passages, and truly progressive specialists have begun to realize that back of the local disease there is often a central neurosis which refuses to be favorably influenced by local treatment, but yields, together with the peripheral disease, to a rational general plan of treatment. There are, however, too many left yet who believe that catarrh is the root of nearly all human evils, who imagine that nearly all morbid nervous conditions are caused reflexly from the nose, and who even believe that they can cure hysteria and insanity by local means.

While it is perfectly right and proper and simply a matter of course, to eliminate any peripheral irritations which naturally tend to intensify existing nervous derangements, it must be remembered that back of the unimportant peripheral, there is an all-important central disorder and that local means are of no avail when central ones are overlooked.

It would be needless to dilate upon the mis- and abuses of the reflex theory in aural, dental and other local diseases. Here, as elsewhere, reflex troubles are met with, but not to the same degree as is claimed by many. Some dentists especially do a great deal of damage to patients afflicted with facial neuralgia because they labor under the mistaken idea that all such affections start from the teeth. By the jarring attending operations on teeth, they often aggravate the trouble. The pulling of sound teeth for the relief of pain, a procedure which even in our days is not unfrequently resorted to, cannot be too strongly and unqualifiedly condemned.

I cannot refrain from devoting a few words to another delusion which has taken a firm hold upon the profession and which relates to the rôle that an abnormal condition of the prepuce and clitoris is believed to play in certain nervous affections of children.

Reflex epilepsies and reflex paralyses have been indiscriminately and recklessly attributed to such abnormal, often excessively trivial conditions. The reports of the speedy relief, and cure of seemingly hopeless maladies in children published in the beginning of the seventies read like tales of 1001 nights. A simple operation on the preputium or the clitoris, especially circumcision in boys and the removal of a ring of hard and inspissated smegma from the fossa glandis penis was said to have changed cripples into healthy individuals.

While I was perusing these reports one peculiarly struck me very forcibly; it was the absence of neurological criticism and the prevalence of letters written by exulting mothers who bore testimony to the wonderful change wrought by the operation, but who in their writings displayed an unmistakable hysterical temperament. What this means, both as to the reliability of such testimony and the character of the disease in their offspring I need not dwell upon [illegible] this time and place. Of late the miraculous reports have not been so frequent, although the delusion is still prevalent, that nervous disorders are caused instead of simply aggravated by perputial or clitoridian abnormalities. Again, in order not to be misunderstood, I emphasize that peripheral disease here, as elsewhere, ought to be treated, because in a certain percentage of cases (not in all, by any means!) they give rise to co-sensory and reflex disorders, possibly even reflex paralysis; I protest only against indiscriminate and senseless generalization.

The most remarkable cases of this class were the paralyses reported as cured. To my mind they were cases of poliomyelitis chronica infantum, which, while improved by relieving local irritative lesions, were certainly not completely restored.

That cases of reflex paralyses do occur, there can be no manner of doubt. Instances of this kind have been reported in the medical history of the War of the Rebellion and have likewise been observed during the Franco-Prussian War. Thus, *e.g.*, if a person, as one report has it, receives a bullet in the region of the tenth rib, and the arm on the same side is immediately paralyzed, the course of the ball precluding all possibility of an injury to the nervous apparatus of the arm either peripheral or central, we must admit that this is a true reflex paralysis.

Such cases have been almost invariably observed in sudden and violent injuries; whereas the paralyses alleged to be due to distant lesions of a chronic nature must, in my opinion, be regarded with suspicion.

The same is true of the reported reflex atrophies, whether resulting from acute or chronic distant lesions.

Our several paths in life are divergent; with the divergence in direction there is necessarily connected a difference in the facts gathered on the several fields of observation; from this difference there ensues a discrepancy of opinions and their inevitable clashing. It is by such antagonism, and in particular by our intra-professional strifes and combats that truth is finally evolved and errors disappear.

It might appear that the foregoing remarks are but an example of the well-known *orationes pro domo*, so common in specialistic literature, and that they are no more or less than one of the often witnessed efforts of a specialist emphasizing the importance of that branch of medicine which forms the subject of his predilection.

Far from it! The object of my criticisms was to bear testimony to the harmful and noxious feature of specialism, as tending by its luxuriant growth to overshadow, obscure, and dwarf "internal medicine," so-called, *i.e.*, that science which alone is capable of rendering the specialist fit for his work, and insuring that success which is not gauged by the amount of money he makes (often unearned and undeserved), but by the real and substantial aid which he bestows upon his fellow men. Of all the branches of internal medicine, however, which specialists ought to cultivate, and a satisfactory knowledge of which alone can prevent self-deception on the part of the physician and unjustifiable meddling harmful to the patient, neurology stands foremost.

REFLEX URETHRAL AND GENITAL NEUROSES, URETHRAL NEURALGIA AND HYPERÆSTHESIA AND NEURALGIA OF THE TESTES.

Read before the Section of Neurology and Medical Jurisprudenc[illegible] the Forty third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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OF CHICAGO.

There are a few morbid conditions of a functional character which, although often times an integral part of organic diseases of the organs which it is my especial province to consider, are occasionally either morbid entities or else the prominent source of complaint on the part of the patient—indeed we are apt to be more often consulted regarding these functional or nervous derangements than the diseases upon which they frequently depend.

There is, perhaps, no subject in the whole range of genito-urinary disturbances, of greater importance than the varied phenomena involving nervous derangements, that are due, directly or indirectly, to pathological conditions of the various portions of the urethral canal. It is certain also, that in no class of cases which come under the observation of the genito-urinary surgeon, is an accurate diagnosis of greater importance, or more difficult to accomplish. I feel, therefore, that a contribution to the special study and treatment of such cases is to say the least, warrantable.

When we consider the vast amount of labor and talent that have been devoted to the study of the reflex neuroses of the female, due wholly or in part to pathological entities affecting the uterus and its appendages, it is certainly surprising that more attention has not been given to analogous conditions in the male, due to disturbances of the generative organs and especially of the urethra.

Taking as our point of departure the prostate body, we will find quite a close similarity between some of its morbid conditions and those affecting the uterus. Physiologically, the prostate, or at least a portion of it, is the homologue of the uterus, there being the closest resemblance in the muscular structure of the two bodies. If the muscular tissue becomes perverted in growth, we have in the one, uterine myoma, and in the other, prostatic hypertrophy, the structure of the two morbid processes being strikingly similar. When, as is occasionally the case, the "third lobe" of the prostate becomes so circumscribed as to form a distinct tumor, it is generally not unlike a pedunculated fibroid. It will be found also that certain remedies which have a pronounced action upon unstriated muscular fibre, have a somewhat similar action upon the prostate and uterus, this being especially true of secale, ustilago maidis, and hammamelis. Certain sedative remedies act very similarly upon irritative affections of the uterus or ovaries, and the prostate. To carry the argument a little further and directly approach the subject of neuroses, it will be found that certain irritations affecting the prostate, will produce effects quite like those produced by utero-ovarian irritation in women. False spermatorrhœa (spermatophobia), pseudo-impotency involving disgust for the sexual act, melancholia, hypochondria, neuralgias whether of the contiguous or remote nervous filaments, and nervous inhibition amounting to almost complete paresis, are all possible results of urethral or prostatic irritation, and these conditions are all represented by similar disturbances, such as hysteria and allied conditions in the female, due to morbid conditions of the generative organs. The analogy between the results of prostatic catarrh and those of cervical catarrh, as shown in one of the cases herewith reported, is sometimes especially striking.

One of the interesting features of stricture of the urethra, is the ensemble of symptoms of a nervous character that is so often seen, and which neuroses are frequently entirely disproportionate to the degree of organic trouble present. Cephalalgia, neuralgia in various localities, particularly sciatica, lumbar and intercostal neuralgia, are quite common, but are probably regarded by both physician and patient, as coincidences rather than as bearing any consequential relation to the stricture. Associated with these are others (quite as prominent in some cases) of a purely mental character, such as melancholia, hypochondria, disturbed sleep, incapacity for intellectual effort, and deterioration of business capacity, perhaps associated with great irritability of temper. Disturbed digestion and general faulty nutrition are quite constant. That these various morbid conditions depend upon the stricture is never fully appreciated until that organic entity is cured, when the complete restoration to health demonstrates their true relation to the primary source of irritation. Many of my patients tell me that they had become so accustomed to their little ailments that they had come to consider them a matter of course, and had never dreamed of their association with the stricture until the latter was cured. One of my patients remarked that he did not know how sick he was until he had been cured of his stricture.

Certain cases of gleet are associated with considerable mental depression which is commonly attributed to the moral effect of the supposed drain upon the system. This mental disturbance I believe to be in many instances the result of reflex irritation through the sympathetic system, which is so closely associated with the functions and nutrition of their sexual organs.

Morbid conditions of the urethra not only cause reflex neuroses in other portions of the body, but they are often a reflex result of disease of contiguous strictures; thus I have noted cases of spasmodic stricture dependent upon hernia and varicocele. Dr. Otis has described some very interesting cases of chronic spasmodic stricture of reflex origin. Operations about the arms are very often followed by spasmodic stricture and urinary retention. Morbid conditions of the anterior portions of the urethra often cause reflex disturbances of the deeper portion of the canal, or indeed, of the bladder. This is very familiar in connection with the results of contraction of the meatus.

One of the most annoying complaints which the surgeon is called upon to treat in connection with the genito-urinary apparatus, and especially in stricture, is neuralgia and hyperæsthesia of the urethra. This disorder is most often the result of long standing urethral inflammation, or stricture with its attendant gleet, and frequently persists long after all organic disease has apparently been cured. The majority of patients who suffer from urethral neurosis of this kind are either of an emotional, highly sensitive nervous organization, often simulating "hysteria in the male," or of a gouty temperament, with highly acid and concentrated urine. Anæmic and cachectic patients are especially liable to it if nervous or rheumatic. In such patients the imagination has been overwrought by the dread of serious results from urethral disease, and the mind depressed by a sense of self-degradation. The condition of the mind as well as that of the urethra, has been impaired by long continued treatment of something which, although trifling in itself perhaps, is to the patient a terrible morbid entity, and a mental incubus from which he is never free excepting during the hours of sleep. Quack literature, irritating injections, over-enthusiastic treatment, sexual starvation and excitement without gratification, are all disturbing elements in his case, and if we superadd the results of dissipation, intemperance and dietetic errors, what wonder is there that he never gets well, or that he magnifies the slightest unusual sensation about his sexual organs into something new, serious and startling. Such patients will say to us when we try to convince them that their gonorrhœa, gleet or stricture is practically well: "But, doctor, I am not quite right, I have a funny feeling at this point in the canal;" or the complaint will be varied by a description of severe burning or cutting pains in the canal during micturition, or a tender spot, usually near the meatus; sometimes the pain radiates to other portions of the sexual organs. On examination with the urethroscope, nothing appears which would account for the trouble: and treatment is usually of little avail, unless we succeed in obtaining the patient's confidence and inducing him to believe that his trouble is not organic and will soon wear away—only too often, however, he goes from surgeon to surgeon in the vain endeavor to find relief, until, despairing and disgusted, he resigns himself to what he considers inevitable fate, and lapses into confirmed melancholy and hypochondria.

Morbid states of the prostatic anus and vesical neck, with or without coexisting stricture, occasionally give rise to urethral neuralgia; great irritability of mind alternating with depression and melancholia. Vesical calculus and tumors are especially liable to be complicated by it. Hyperæsthesia of the urethra is so often associated with stricture and gleet, that it is worthy of consideration in every case in which obstructive spasm occurs during instrumentation; some canals will be found to be so hyperæsthetic that a chronic spasmodic condition exists. In some cases of chronic spasmodic stricture or urethrismus, local lesions of the mucous membrane exist, while in others nothing abnormal is to be detected.

Hyperæsthesia of the Testicle is an interesting condition which sometimes results from reflex irritation from stricture; more often, however, it is due to excessive sexual indulgence, or the opposite extreme, *i. e.*, ungratified or prolonged sexual desire. It is most apt to be associated with cachexia, gout, neurasthenia or anæmia. The testicle may be relaxed and soft, or full and firm to the feel. Oftentimes varicocele is present and acts as an efficient cause for the affection. Hypochondria, melancholia and various mental perversions of a delusional character are not unusual, and may perhaps be associated with a sluggish portal circulation or dyspepsia. Sudden deprivation of customary sexual indulgence is said by Curling to be a frequent cause. The symptoms consist in extreme sensibility and tenderness, either of the entire testicle or some spot upon its surface. So exquisitely tender is it that oftentimes the contact of the clothing and the various bodily movements cannot be borne.

Neuralgia of the Testicle is really an exaggeration of hyperæsthesia, and has in addition to hypersensitiveness, paroxysms of shooting, cutting pain in the organ. The causes are much the same as for hyperæsthesia, syphilis, gout and neuralgia having a prominent place in its etiology. Urethral stricture quite often, and prostatic and bladder disorders occasionally, cause it. The pain is much like that of renal colic, and is sometimes attended by retraction of the testis from spasm of the cremaster, and the sick, faint feeling and cold perspiration characteristic of shock. I believe that some cases are really due to irritation of the renal pelvis and ureter by sharp crystals in the urine, and this acting reflexly produces pain in the testis. Usually only one testis is involved. As a rule, the patient can walk about, but in the severe cases he is apt to be greatly prostrated, and in addition, he usually suffers from pain and soreness on movement.

The Treatment of the neuroses which have been presented consists in following some very plain indications, as well as putting in practice numerous general principles. First and most important of all is attention to the patient's mental condition. His mind should be diverted from his physical ills, and at the same time kept free from all sources of sexual disquiet. Questionable literature and the society of loose women must be avoided; in short. an attempt should be made to correct the impression so prevalent among men, that man's chief mission upon earth is the procurement of material wherewith to cloy his sexual appetite. *Once dispel the idea that his penis and testes constitute the axis around which his earthly existence revolves, and one will have done more for his patient than if he had fed him the entire contents of a drug store.* Having allayed sexual disturbance of a purely mental or moral character, it remains for us to secure for our patient physical sexual rest, it being sometimes a matter of nice judgment to determine whether moderation or strict continence is best for the patient's welfare. In a general way it may be said that those neuroses which are dependent upon or complicated by actual inflammation, acute or chronic, demand absolute continence, while in those of a purely nervous character, moderation is to be advised. It is always a hard matter to determine the degree of success of our prescription in this matter, as the patient's penis is not only quite liable to gain the mastery over his reason and judgment, but over his morals as well, and he will therefore be apt to consider that a lie to his doctor, like Rip Van Winkle's drink, doesn't count.

Second only to sexual rest, is the correction of urinary acidity. This may be corrected by diet and remedies combined, the diet being by far the most important. The proper standard for a suitable diet is bread and milk, but this may be varied within narrow limits. Nitrogenized food, stimulants and tobacco must be strictly prohibited. As an adjuvant to this regimen, the Turkish bath does excellent service.

The best remedies to correct hyper-acidity of the urine, are the acetate and citrate of potassium, liquor potass, and in gouty or rheumatic patients (who are especially liable to neurotic symptoms from urinary disturbances) lithia, colcicum, and salicylic acid. Mineral waters are very useful, the Buffalo Lithia and Waukesha waters being especially useful. Several of my patients claim great benefit from partaking freely of the Garfield Park mineral waters.

Sedatives and anti-spasmodics are often useful in these cases, the following being of service in different cases, viz.: potassium bromide, gelsemium, hyoscyamus, camphor monobromate, *morphia*, salixnigra, and ergot. Tonics are often required, the best being the chloride of iron, strychnine, arsenic and quinine. In those rare cases of spasmodic stricture of malarial origin, quinine is of course a specific. Three very useful drugs are the phosphide and bromide of zinc, and the bromide of arsenic, these being great favorites of my own.

In many cases of urethral neurosis, surgical interference is required, thus a contracted meatus must be cut, a stricture dilated or cut, a hernia or varicocele operated upon or properly supported, etc. *The paramount indication from a surgical standpoint, is the relief of obstructive and inflammatory lesions of the genito-urinary tract.*

Cases of irritability and hyperæsthesia of the testis are by no means promising. The use of anodynes is ordinarily reprehensible, as the disease is chronic in character, and a narcotic habit may be readily acquired. If hygiene, the steel sound, the suspensory bandage and marriage do not cure, the case is apt to be hopeless. Galvanism and the application of ice bags, are said to be of service. Castration is not to be thought of, but the idea suggests itself to me that in an obstinate case, stretching the spermatic cord with incisions into the tunica albuginea might be successful. If varicocele exists, an operation may be successful in curing the neuralgia. Hammond suggests pressure upon the cord for the relief of obstinate cases, upon the theory that in this way the sensibility and conductivity of the affected nerve fibres will be obtunded. Return in opposite after removal affected organ.

A very interesting case showing the great annoyance which may reflexly arise from slight irritation of the genito-urinary tract came under my observation a few days ago. A gentleman 28 years of age had been troubled by frequent micturition, especially at night for some years. At times he would be compelled to rise four or five times at night to evacuate his bladder. The only point in his history of any importance was a gonorrhœa some seven or eight years ago. He confessed to masturbation and sexual excess in times past, but stated that sexual apathy had prevailed of recent years. On examination, I found a meatus which had been badly cut by some surgeon one year ago. Just within it was a very irritable and resilient stricture of a calibre of twenty Fr. Not a stricture perhaps, in the eyes of some surgeons, but a decided stricture in my opinion. This contraction was so irritable that attempts at exploration threw the entire canal into a state of spasmodic contraction. I found it impossible to pass a bougie through the deep portion of the canal. Cocaine was applied and a meatotomy at once performed. As soon as the meatus was free, I passed a 32 Fr. solid steel sound into the bladder without the slightest effort. The night of the operation, the patient had the first uninterrupted sleep that he had enjoyed for years, this experience being repeated every night following until he left for his home in the West.

We have here a case of vesical and prostatic hyperæsthesia, and chronic spasmodic stricture—urethrismus—instantly relieved by removing the reflex source of irritation, a resilient and irritable meatal contraction.

Another interesting case of a somewhat different type is at present under my care. This case shows how posterior irritation may reflexly excite disagreeable symptoms in the anterior portion of the genito-urinary tract. A young man of twenty-five who had suffered from several severe attacks of gonorrhœa, presented himself to me complaining of severe burning and hot, lancinating pains along the pendulous urethra, localized at times at a point one inch posterior to the meatus. These painful symptoms were chiefly manifest after urination, although present in the intervals. The patient was extremely neurotic and suffered from sexual hypochondriasis. Otherwise he was in normal condition. The urine presented no pathological features, save tripper fäden and mucous casts of the prostatic follicles of the characteristic horse shoe nail variety. Examination with the bulb showed a urethral calibre of 34 French, and an absolute freedom from contractions. There were several points of tenderness in the penile urethra and excessive tenderness in the prostatic region. Rectal examination showed the prostate to be slightly enlarged. I made the diagnosis of urethral neuralgia and hyperæsthesia dependent upon posterior urethritis and follicular prostatitis. There was no cutting to be done, and the treatment therefore, consisted of intermittent dilatation with large sounds, and the application of nitrate of silver solution to the prostate. These applications were alternated with the application of the continuous current, positive pole, to the deep urethra. Internally, tonics were given, the tr. ferri chlor. being mainly relied upon. The case has slowly but markedly improved, a fact which is particularly gratifying in view of the stubbornness of such cases.

I wish to state, in passing, that I envy those surgeons who have such brilliant success in the management of this type of genito-urinary neurosis as is claimed by some. Personally, I had rather see the gentleman with the cloven hoof walk into my office, than one of these patients.

The explanation of the obstinacy of such conditions is to be found chiefly in faulty sexual hygiene, matter over which we have but little control.

As illustrative of the interesting character of some of the cases described, I take the liberty of presenting the following, selected from my case book.

Case 1.—Reflex vesical irritability and intercostal neuralgia from contracted meatus. W. R., age 39. This gentleman had had numerous attcks of gonorrhœa in his youth, the last attack having occurred about fifteen years ago. Since this last attack he had been troubled with frequent micturition, necessitating his rising six to eight times during the night, and causing great irritability of mind. Micturition was occasionally quite difficult, requiring fifteen or twenty minutes for its completion, the stream being especially slow in starting. Every spring and fall and whenever he was overworked he suffered from a severe attack of pleurodynia, which had been variously diagnosed as pleurisy, impending pneumonia, cardiac neuralgia, intercostal nearalgia, etc. In two of these attacks in which I attended him, there was an elevation of temperature of about four degrees, with considerable prostration, leading me to believe that the attacks were of a rheumatic character. On examination of the urethra, I found the meatus so small as to barely admit a small probe, and excessively tender and inflamed. A slight gleety discharge was noticeable, which the patient stated had been a constant symptom for some years. I at once enlarged the meatus to 34 French, and attempted a thorough exploration of the canal. I found that steel sounds would not pass the muscular urethra on account of the intense spasm which they induced, soft bougies, however, passed readily up to 18 French. Above that size could not be passed without producing intense pain. No organic contraction of the canal could be demonstrated by either urethrometer or *bougies a boule*. The second night after the meatotomy, the patient slept soundly for the first time in some years, and he has continued to secure his natural rest ever since, it being now three months since the operation. The flow of urine has become quite free, and starts as soon as an attempt at micturition is made, the act of micturition being of normal frequency. A marked improvement in the general health is noticeable, and the nervous irritability has in great measure disappeared. There has been some increase of weight, but as the patient is naturally spare, this has not been very marked. The attacks of pleurodynia have not recurred, although the usual time for their occurrence has passed; and as time goes on, I am confident that the theory of their dependence upon the urethral irritation, will be confirmed. The gleet has disappeared entirely, and there has been a decided increase of sexual vigor; in short, as the patient expresses it, he is "himself again."

Case 2.—General sympathetic disturbance and neuralgia of the testes, from stricture of large calibre and follicular prostatitis. J. G. R., aged 45. This gentleman had had several attacks of gonorrhœa, the last one having occurred some 20 years ago. For the last four years had been suffering with irritation of the urethra, which had been referred to stricture, and treated by dilation. Later on he had been "quacked" for diabetes, prostatic enlargement, Bright's disease, rheumatism, and several other afflictions, with no effect save to convert the patient into a confirmed hypochondriac. At the time he consulted me, he had been suffering from paroxysmal pain in the testes, with occasional "burning" sensations in the testes, perineum, and cranial vertex, and pains of a rheumatic character in the limbs. On examination of the urethra I found that it would admit an 18 English sound quite readily, save that some pain was experienced at a point one inch from the meatus. At this spot the *bougie a boule* demonstrated the existence of a linear stricture of large calibre. The prostate was found to be somewhat tender, but not enlarged. On examining the urine I found that it contained membranous shreds, which from their appearance I judged to be from the prostatic urethra, and the result of follicular prostatitis. A slight gleety discharge was noticed, evidently of a similar origin.

The meatus and stricture were cut to a calibre of 40 French, with a complete relief to the neuralgia of the testes. The rheumatism in the limbs has greatly improved, but the feeling of heat in the testes, perineum, and head has in a measure persisted, although much better. These latter symptoms I attribute to prostatic irritation, more particularly because applications to the prostatic sinus, of a sedative or astringent character, produce a marked and speedy amelioration of them. I have found also that the shreddy appearance of the urine was increased by each application to the prostate. Hot boracic acid irrigation has been substituted for these applications. and the case is slowly improving. The connection between the neuralgia of the testes and the stricture in this case is demonstrated by the improvement resulting from urethrotomy.

Case 3.—Pseudo-impotence from contracted and irritable meatus. This case and case 4, I will not give in detail, but will present the salient points:

A young man of 27 had suffered from several attacks of gonorrhœa, the last of which ran into a gleet which lasted about a year. There has been no trouble with urination, but about six months before I saw the patient, he noticed a loss of sexual power. He would succeed in securing an erection at times, but erection would suddenly cease in the performance of the act of copulation. On examination I found the penis and testes apparently normal, but the meatus was quite narrow and excessively sensitive. There was no deep or penile stricture.

The meatus was incised to 34 French, and sounds passed to the bladder every third day for several weeks. At the end of a month improvement was reported, and in about two months the patient reported himself as entirely recovered from his sexual disability.

Case 4.—Vesical atony from contracted and irritable meatus. This patient, 40 years of age and a gambler by profession, gave the usual history of numerous gonorrhœas and also of syphilis. Micturition had for a long time been attended by pain and smarting at the meatus, and a slight gleet had been present for some years. For about a year the stream had grown less and less forcible, until quite a strenuous effort was necessary to empty the bladder. On examination the meatus was found to be only moderately contracted, but very tender, the lips being everted and reddened. No deep strictures were discoverable. The feeble flow of urine through the catheter demonstrated the vesical atony. As the obstruction was only moderate and was congenital, the atony was explicable only upon the theory of reflex spasm of the cut off muscle and inhibition of the detrusor urinæ. Meatotomy to 40 French resulted in an almost complete cure as demonstrated by examination six months after operation.

Other cases of a neurotic character have occurred in my genito-urinary practice, but these cases will serve for the purpose of illustration. In all of my cases, due attention has been paid to general hygienic and medicinal measures, but the details of treatment would simply result in prolixity, without adding to the value of the report.

I have found that reflex neuralgia of the testes, penis and cord, and spasmodic stricture are by no means rare as several instances among my patients serve to demonstrate.

Discussion.

Dr. J. G. Kiernan, Chicago, Ill.:—The subject of reflexes is an interesting one, and a Chicagoan is in duty bound to take it up, for we have a remarkable genius there who cuts out "pockets" of the rectum, removes the clitoris, the ovaries for insanity and neuroses, and then the patient recovers—if he or she, as the case may be, does not jump out of a window. He claims to have cured moral insanity by removing pockets of the rectum. Some of the patients are no better than they were before these pockets were removed. He has cut the "pockets" of several reporters, but they are as great pathological liars as they were before. To come down to the main point, there are certain instances in which we are justified in a limited use of the reflex hypothesis, in connection particularly with the genito-urinary organs of the male. It is well known that the first symptom of renal disease in horses is paraplegia, and what occurs in the lower animals may occur exceptionally in mankind, especially in those degenerate types who resemble animals. These cases are extremely rare, and the burden of proof rests on those who report them.

Dr. Hughes for the last twelve years, in the *Alienist and Neurologist*, has denounced the abuse of spaying and removal of the tubes. I have seen five cases in an insane hospital in which the lucid interval was converted into excitability by oöphorectomy, and such cases frequently appear in the literature. These gynecological procedures have had the same result. That gynecological procedures have been scandalously abused in the treatment of the psychoses and neuroses, is the opinion alike of gynecologists and neurologists. The "reflex" hobby has been ridden to death.

Dr. C. H. Hughes, St. Louis, Mo.:—I think the paper of Dr. Bremer is a most admirable and pertinent one, and when it is published in the Transactions it will go before the general profession, where it will do some good. I think that the time has come for iterating and reiterating the fact that this reflex theory has been carried farther than the physiological, anatomical and pathological facts warrant. We know from the particular direction that our own studies have taken for the past thirty years or more in regard to this subject, that some of the claims for the reflex disease are absolutely groundless, and physiologically, pathologically and logically ridiculous. It is not difficult to understand how a wave of irritation, starting from a congested ovary, has been a point of local irritation, may be transmitted along the ganglionic system so as to involve the heart in ganglionic functional disturbances. But it is a difficult thing for a neurologist to understand how an indurated cervix can by any process of reasoning, based upon anything known in the physiology of the nervous system and its connections; or how a cicatrix, which twenty-five or thirty years ago was made with impunity and said by gynecologists to be harmless, can be the *fons et origo* of mental aberration. These gentlemen mistake sequences in the neuropathic for consequences, and jump at the most erroneous of conclusions, and gynecology has brought itself into disrepute during the past three decades in its history to such an extent that its own votaries are to-day engaged in retracting their formerly promulgated errors. They call them "nerve" counterfeits of uterine disease, because they now understand better than they did a quarter of a century ago the nervous mechanism and nervous diseases of woman. The very diseases which in the literature of gynecology were treated of twenty-five years ago as gynecic neuroses dependent upon uterine diseases, are confessed to be neurological counterfeits of uterine disease. It is the province of this Section to further enlighten the general profession, and I am not sure but that some of the genito-urinary surgeons may receive some enlightenment in the same direction from neurology. Fortunately they have not gone so far. If Dr. Lewis A. Sayre had taken more account of the neuropathic condition of his patients and their constitutional tendencies, he would not have expected so much from a circumcision, and attributed the results of change of air and of environment, and general tonic treatment, to his little operation on the foreskin.

Can any gentleman tell me how we might have a facial neuralgia dependent upon ovarian congestion? Can any gentleman explain to me by what physiological process of action it can be shown, or by well established clinical experience it can be demonstrated, that we can have such a pathological result from a cicatrix of the cervix? Yet it has fallen under my observation to have treated such patients. I remember to have read of a case months ago which was finally cured, which had undergone nine years of gynecological torture upon the hypothesis that the patient's neuralgia was a reflected uterine irritation. The woman's husband was a doctor and her brother was a doctor, who blamed the woman's uterus, and their suggestion was confirmed by subsequent consultants.

While I say, as a neurologist, that all sources of a peripheral irritation should be removed in suffering patients, because the neuropathic are a peculiarly irritable class of patients, and local irritation depresses and lowers general nerve tone and thus aggravates neuropathic conditions elsewhere, intensifying actual nervous conditions in other parts of the system and bringing into activity latent states of instability through lowering of the nutrition of the nerve centers, the ever ready reflex theory is far too often misapplied and too unwarrantably evoked.

Dr. William Fuller, Grand Rapids, Mich.:—Personally I desire to thank Dr. Bremer for his paper on account of the high moral tone of the sentiments expressed in it. I feel that the Section is to be congratulated upon having such a paper as that. I think that the abdomen is too often opened upon too slight pretext. A careful diagnosis is now ignored. I can recollect a time when it was more disgrace to a surgeon who upon opening the abdomen should find what he did not before expect, than it is now to kill a patient on the table. Laparotomy is an indefinite word, and should be confined in its use to those instances in which the abdomen is opened by mistake or for information only. The glory of having "made our last fifty or hundred laparotomies" is to some persons a dangerous sentiment and to be deprecated, as an aspiration liable to disgrace legitimate surgery in the eyes of the profession and of the people. The present craze to unsex woman is an outrageous abuse of the art. The ovaries of one woman were removed on account of pains from gall stones. I would suggest the removal of the testicles for slight nervous disturbances in males as a counteracting measure.

Reflex derangements mostly follow definite courses in the nervous system, affecting related bodily functions and mental emotions. Sexual diseases affect the passions, produce hystero-epilepsy and moral defects. Masturbators become religious melancholics, and nearly all the peculiar religious sects and wild philanthropic schemes have their foundation in derangement of the sexual system.

Dr. J. E. Emerson, Detroit, Mich.:—I desire to personally thank Dr. Bremer for his excellent paper and for its vigorous tone. I have experienced the grievances which he has expressed from fanatics who have made so much of the reflex neurosis theories in regard to disease, more especially in cases of insanity, where many practitioners insist upon making a vaginal examination in every case of insanity in a female. Dr. Goodell has called attention to the fact that women have other organs besides the uterus and its appendages, whose diseases may excite disorders of the nervous system exactly as they do in men.

In spite, however, of my approval of the paper, I must say that my own experience compels me to utter a word of caution in regard to certain ocular defects which cause reflex neuroses in the form of headaches, or even more serious functional disorders. In many cases I have been convinced that astigmatism or a defective coördination of the optic muscles produced these conditions; but I feel grateful to the doctor for his paper, which attacks this fanaticism so vigorously.

Dr. H. N. Moyer, Chicago, Ill.:—While there is a certain element of truth in the reflex theory of disease, still I think it has been carried too far, and Dr. Bremer's paper is just what it ought to be. Dr. Goodell and other gynecologists are finding it out. There are a great many counterfeit conditions of the uterus and its appendages that are mere expressions of a general neurosis. I think the true principle lies between these two extremes. There is an immense amount of harm done by some men in looking for some little point of irritation in the special organs of which they treat, and the moment they find an array of symptoms they attribute them to that one thing.

Dr. G. Frank Lydston, Chicago, Ill.:—Mr. Chairman, in regard to what has been said of laparotomy being overdone and carried entirely too far, if I am not mistaken I was a pioneer in ridiculing that particular thing.

Dr. Hughes said the neurologist could teach the genito-urinary surgeon some things in regard to reflexes. I have no doubt about it, and that is precisely why I am here. A friend of mine asked why I was going to read a paper in the Neurological Section. I replied, "simply because I can get a more scientific discussion on my paper in this Section than anywhere else." I came here to learn, not to teach.

There are certain points regarding the abuse of gynecological operations, particularly with reference to the cure of mental phenomena, that have been suggested to me by practical experience. Recently I read in the Transactions of the Southern Surgical and Gynecological Association a report of some 30 laparotomies, successful and unsuccessful, reported by a Southern surgeon, in which he recounted a number of patients upon whom he had operated for the cure of mental phenomena. Of those who lived through the direct and remote results of the operation, several were cured, others were not, and still others committed suicide. One I believe, was cured at the end of a year, after operation. Such cures are probably cases of acute mania. I had an illustration of such a case in my own practice a short time ago. A young lady of extraordinary talent, with a high-strung hereditary nervous temperament, and extremely neurotic, became suddenly insane as a consequence of over study. I was called to see her, not knowing what I was going to find. I found her violently insane, and she had been in that condition for some little time. One of my professional friends with whom I conversed, took the ground that laparotomy was indicated, and that the ovaries ought to be removed. As I was interested in the family, I said, "we will wait a little." At the end of 18 months the young lady became perfectly well. I am satisfied that if I had not had a personal interest in the family, oöphorectomy would have been done, and the case cured—in a year and a half.

As far as my own position is concerned with regard to the reflex genito-urinary neuroses, I do not wish to be understood as trying to diagnose something out of nothing. I believe we have conditions of the genito-urinary organs—painful or otherwise—which produce effects upon the brain or nervous system in general. I believe that the diagnosis of reflex nervous irritation can not be thoroughly established until we can, as Dr. Hughes suggests, map out a definite relation between the source of irritation and the reflex. I do not believe ovarian irritation can produce a facial neuralgia any more than that the moon is made of green cheese. It is necessary for us to find the primary seat of irritation in order to justify a diagnosis of reflex derangement.

A certain gentleman attending this convention has had an experience in his own case, that shows a definite relation between a tendency to melancholia and nervous depression, and genito-urinary irritation. The case was treated for neurasthenia and other things by a well known neurologist in the city of Chicago. There was no explanation given as to the localization of this particular lesion. I happened to know that this gentleman had an irritable prostate. He subsequently came to me, I examined him and found an irritable meatus with chronic inflammation behind it. He also had prostatitis. Meatotomy with the application of nitrate of silver to the prostate gave the gentleman the greatest possible relief.

Dr. Hughes was vigorous in his condemnation of the theory of certain remote nervous disturbances being produced by cervical reflex irritation. How then must we explain those cases of obstinate vomiting in pregnancy, unquestionably due to cervical irritation, which are relieved by moderate dilatation of the cervix? There seems to be a direct relation between cause and effect under such circumstances. One point should not be overlooked with regard to the relation of irritation of the genital organs and remote functional disturbances. A comparatively slight irritation in this region will produce a disproportionate functional disturbance elsewhere because as we well know, there is no location in the body in which the sympathetic supply is richer than in the sexual organs. The structure of these organs proves conclusively, the greater importance of irritation of these tissues as compared with others with relation to the liability to reflex irritation of parts more or less remote from the primary disturbance.

Mignonette for Tapeworm.—In Russia the flowers of the mignonette are used as a remedy for tapeworm. A decoction of the flowers is made, and the liquid is drunk fasting. It is then followed with a dose of castor oil. The entire worm is rejected in a few hours.—*Pacific Record.*

RETINAL EXCITATION OF CORTICAL ORIGIN IN VISUAL HALLUCINATION.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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The question to be considered under this title is: Does ideational activity of the cerebral cortex ever induce centrifugal excitation of sensory end-organs through their afferent sensory nerves, and thus lead to the sense of objectivity, or projection, that is the characteristic feature of hallucination?

For the sake of clearness, consideration of the question is confined to the sense of sight.

Quite commonly hallucination is made to include all phantasms that have no other than a subjective foundation; but to answer the present question, a stricter differentiation of subjective phantasms than the common definition implies, is necessary. Phantasms having a peripheral origin, though without objective, or external, cause, must be distinguished from those having a central origin. Following Emminghaus,[1] the former may be allowed to fall within the term *illusion;* and hallucination may be made to include only those phantasms that have a purely central origin.

In answer to the question of the occurrence of peripheral sensory excitation of central origin, authorities are not in accord, but the voice of affirmation is much stronger than that of negation.

The belief ordinarily entertained is that in an hallucination there is a backward nervous "current," from center to periphery, which perfects the sense of its objectivity.

The prevalent idea is an assumption; for, in the nature of the case, such a reverse "current" cannot be proved to occur; and we may therefore examine the ground upon which this assumption rests, and make a theoretical application of the principle it involves.

Emminghaus[2] says: "The assumption that in hallucination there is a nervous excitation that advances from center to periphery, rests essentially upon the fact that under certain circumstances, visual phantasms *change their location.*"

Krafft Ebing[3] states that with perfection of objective projection of an hallucinatory image, there is probably secondary excitation of the organs of sense involved.

Wundt[4] also holds to this view, basing his opinion upon the statement that visual hallucinatory images may excite after-images, as well as upon the fact that the phantasms move with movements of the eyes.

Sir David Brewster[5] believed that all hallucinations involved the appropriate sensory organs. Esquirol[6] promulgated the theory of the purely central origin and nature of hallucinations.

While D. Hack Tuke[7] thinks that cortical activity is in itself sufficient to produce hallucination, he still allows that the end-organs may be involved secondarily in some cases; and as criteria for the determination of secondary (?) retinal excitation he states as follows:

"If visual hallucinations present the same phenomena as those observed in luminous after-images, they may be regarded as involving the retina."

The phenomena referred to are that the phantasm cannot be artificially doubled; that it covers real objects; and that it moves with the motion of the eye. These phenomena include all the evidence of secondary retinal excitation that other authorities mentioned adduce.

But in visual hallucinations all these phenomena might be present without involvement of the retina at all; that is, they do not demonstrate that the retina is involved. For the visualization of a mental image not involving the retina would necessarily be projected in the immediate field of vision and cover objects in that field, or be fused with them. Thus while these tests will demonstrate whether a visual phantasm is of subjective or objective origin, in the nature of the case it cannot prove involvement of the retina, or at least that retinal excitation is of central origin, when the phenomenon is thus demonstrated to be subjective.

With primary subjective retinal excitation and secondary elaboration of the impression (illusion), we are not dealing here; phenomena of this nature are in perfect harmony with the physiological process of visual perception. It is only the possibility of the reverse process, with the primary stimulus having a central origin, that is here called in question.

Centrifugal excitation of the retina in visual hallucination is not a *sine qua non.* There is abundant evidence to prove that mental images undergo objective projection in the absence of the sense organs that would be involved. Where visual hallucinations have occurred with atrophied optic nerves, if centrifugal excitation took place the element of objectivity must have been supplied without the aid of the retina.

But let it be assumed, that a reverse stimulation occurs and affords the elements of distinctness and objectivity essential in hallucination. For the sake of clearness and simplicity, let it be assumed that the mental image is to be projected visually and involve one retina; that the mental image is that of an object of two dimensions of a given size situated a certain distance from the eye. Then, in accordance with the assumed premises, if this image be projected with an accompaniment of corresponding retinal excitation which assists in the induction of the sense of its distinctness, the retinal area excited must be exactly that area that would be stimulated if the actual figure were before the eye under the conditions of distance and dimension imposed.

In the absence of knowledge of any nervous mechanism designed to select nerve-fibres which shall convey the nervous excitation back to the retina, we may allow that cortical activity attending consciousness of the image in itself conditions such a selection of nerve-fibres as must convey to the retina excitation that distributes the stimulation there in the form of the image. In order that the image thus formed on the retina shall add distinctness to the mental image, it must, in the whole of its dimensions, be confined to the very limited area of the retina in which, as is well known, distinct vision is possible—the fovea centralis. For if the secondary retinal image were indistinct, as it would be, if disposed upon an indifferent retinal area it could not reinforce the distinctness of the mental image. If, for the sake of distinctness, the retinal image must be confined to a certain limited area, and the necessity for this seems clear, then its objective projection would necessarily be like the projection of the distinct image on the retina when the eye is at rest. The apparent visual angle would be all that could assist in the projection of the secondary retinal image. But the visual angle in itself has no determining effect in developing an idea of space; and therefore in the assumed case it could alone have no effect in determining definite projection of the assumed centrifugally conditioned image. Therefore, the secondary retinal image, even though it correspond in form with the primary mental image, could not in itself condition an objective projection in harmony with the idea of objectivity with which the image is present in consciousness, and therefore, for distinctness of projection of the mental image, the aid of some other element than that supplied by the secondary retinal image would be required.

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[1] Psychopathologie.
[2] Op. cit., pp. 156, 157.
[3] Lehrbuch der Psychiatrie, dritte Auft., p. 114.
[4] Physiologische Psychologie, Bd. ii, pp. 423, 433
[5] Letters on Natural Magic.
[6] Maladies Mentales.
[7] Hallucinations and the Subjective Sensations of the Sane, Brain, Vol. xi, p. 41.

Now, let the hypothesis be complicated by bringing binocular vision into consideration; let the assumed mental image effect both retinæ. Then it must be assumed that the area of stimulation, in one retina,is physiologically correlated with the stimulated area of the other, in order to have perception of a single image. But in this instance, as in the preceding, the projection that results in that the images are identical, will be subject to the same conditions as obtained under the preceding assumption.

To still further complicate the matter, let the image, to be projected, be inverted with the third dimension.

An object having three dimensions seen in binocular vision impresses simultaneous images on each retina that are not identical, save when the object is seen in distant vision; in fact, an object of three dimensions viewed with convergence of the visual axes, may impress images on the retinæ that differ almost absolutely from each other. It is largely owing to the disparity of these simultaneous images of one object on two co-related retinæ, which undergo subjective fusion into one image, that the idea of the third dimension of the object is derived. Now, in the assumption of the reverse stimulation of the retinæ by a mental image of an object of three dimensions, it would not suit the purpose of the assumed secondary excitation were this single mental picture to be photographed identically on each retina; for then the objective projection of them would not possess that want of identity necessary for the induction of the sense of its third dimension. But a single mental image cannot be consciously resolved into two images from which the former might be derived, without having consciousness of two images successively; and it is therefore impossible to conceive, when the mental image is derived from two or more aspects of an object, how consciousness of the single image could condition a centrifugal excitation of co-related retinæ by disparate images. Here again the centrifugal retinal excitation would necessarily lack that determinateness to supply which it is assumed.

The fact is that all our reproduced mental images are complex simultaneous reproductions of a series of simple visual preceptions that were originally received in series and fused by association. The limitation of visual perception conditioned by retinal structure and function is in extreme contrast with the almost unlimited power of simultaneous reproduction in combination of serial, simple perceptions in memory. In the very nature of the case, then, a complex mental image could not condition a centrifugal excitation that is objectively impossible; the retinal excitation, were it to occur, would necessarily be simple, or at most but a reproduction of some element of the mental image. Thus exact simultaneous correspondence between the mental image and any secondarily induced retinal image, is impossible.

Under all circumstances, then, under which we can theoretically conceive a mental image as exciting a reverse "current" to the retina, there would be more or less disparity between the mental image and the resulting sensory excitation; that is, that additional quality with which secondary sensory excitation is presumed to supply the primary mental image for the sake of distinctness, is found to be so indeterminate, that if it were to occur it could only confuse the original mental image.

But if secondary excitation of the retina could not intensify the quality of distinctness in a mental picture, might it not, nevertheless, add the element necessary for its objective projection? Let it be assumed that it does. Then any visual sensation that does not correspond with the mental image present in consciousness is capable of adding the sense of objectivity: any elementary visual sensation, one as well as another, would serve the same purpose.

If this be true, what need is there to assume that there is any reverse sensory stimulation at all? The retina, like all sensory organs, is almost constantly subject to inadequate subjective stimuli, and any or all of these might aid as efficiently in inducing a sense of objectivity as an indeterminate stimulus travelling backwards.

Discussion.

Dr. Wm. Fuller, Grand Rapids Mich.:—Dr. Chaddock's paper reminds me of a case that came under my observation, in which a man was able to see two images with one eye—*monocular diplopia*. When both eyes were open he saw two images of the same object, a true one and another smaller one nearer to him, and placed a little above and to the right. When the left eye was closed both images were seen in the same position, but when the right eye was closed the true image only remained. With the right eye closed he could place his finger on the head of a pin at the distance of two or three feet from the eye, but with the *left* eye closed or with both eyes open he was unable to do so, on account of the uncertainty of the position of the object. There was paresis of the left extremities, especially of the arm. The man had received a severe blow on the right side of the head, over the coronal suture, about a month before, at which time he was unconscious for several hours. The diplopia was observed immediately upon the recovery of consciousness, and has remained up to the time of examination. In walking he lifts his feet high, as the floor appears to him to be elevated before him. The defect in vision was corrected by prisms and disappeared after a short time, about two weeks.

Dr. Welsh, of Grand Rapids, saw the case with me and reported: Distant vision, right eye, 20-30; distant vision, left eye, 20-30. Ophthalmoscope showed a normal fundus.

His opinion was that the false image was the relict of a mental impression which was forgotten after correction had been maintained for a sufficient period to efface it. The case is an interesting one, and I would like some gentleman present to give a satisfactory explanation of it.

The Chairman:—I have not seen a case like it, and am not aware that there is such a case described in literature.

Dr. James Taylor, of London, Eng., stated that such a case was reported in the Transactions of the Ophthalmological Society of Great Britain.

Dr. L. Bremer, of St. Louis, Mo., had seen two cases of monocular diplopia, one case being due to a cerebellar tumor. A number of other physicians saw this case.

Dr. J. H. Kellogg, of Battle Creek, Mich., also reported a case of monocular diplopia, and stated that ophthalmologists believe that such cases are due to irregularities of the cornea or crystalline lens. He had a case in which a man declared that he saw three images at one time with one eye, but these images were not always present. The speaker found only two objects present.

Dr. L. Bremer stated that the eyes of the individual whose case he had reported had been examined by a competent ophthalmologist and nothing had been found to throw light on the condition. The whole question of cortical vision is still very much mixed.

Dr. C. K. Mills, of Philadelphia, said the separation of the optical or cortical field of vision by some lesion might possibly furnish an explanation in some cases, but we have no definite knowledge in regard to these cases.

The Chairman:—I do not believe it is possible for us to have a diplopia through an affection of the cornea or lens. Displacements and disturbances of the lens are exceedingly common; but so far as I know, the condition under consideration is a very rare one.

EARLY NATIONAL LEGISLATION ON THE SUBJECT OF QUARANTINE.

BY STEPHEN SMITH, M.D.,
OF NEW YORK.

The approach of cholera again to our shores, will awaken a new interest in the character, management and efficiency of our quarantine defences against foreign pestilences. The crucial test which is now applied to our present system of State quarantines, and the evidences of their total inadequacy to meet a great emergency, will doubtless renew with great vigor the popular agitation in favor of a National quarantine organization. As a contribution to the discussion of that subject the following facts in regard to the efforts made in the first sessions of Congress may prove of interest, if not of permanent value.

On the organization of the Federal Government, in 1789, several of the sea-board States had quarantine laws and regulations of more or less efficiency. In most of these States the laws were originally adopted by the colonial governments, and in some they had been in effect for nearly a century. South Carolina enacted a quarantine law as early as 1698, Pennsylvania in 1699, Rhode Island in 1711, New Hampshire in 1714, New York in 1758. These early laws were chiefly designed to prevent the importation of small-pox, though yellow fever and ship or typhus fever had attracted attention as diseases capable of transportation. Yellow fever had several times, but at long intervals, been epidemic in seaboard towns having a large commerce with the West Indies, as at Boston in 1693; Philadelphia in 1699, 1741, 1747, 1762; New York, 1702, 1743; Charleston, 1699. But it did not attract attention nor excite great public alarm until commerce with the West Indies, after the Revolutionary war, was fully established. From 1762 to 1791 the country was entirely free from yellow fever. This immunity has been attributed to the parliamentary acts known as the "commercial monopoly," and the war of the Revolution, which prevented all direct commerce with the West India ports and the United States. With the restoration of an active commerce with the West Indies yellow fever again began to make its appearance in those ports where this trade was most active. The first outbreak occurred in New York in 1791, in the West India shipping, and the pestilence proved very severe and fatal, and caused great public alarm. In 1793 it appeared in Philadelphia, and was then universally attributed to the shipping from the West Indies. The pestilence now began to excite public alarm, especially in neighboring cities having personal and commercial intercourse with Philadelphia. New York, Chestertown, Baltimore, and Annapolis took active measures, and finally established rigid land quarantines against Philadelphia. In 1794 it appeared in New York, Philadelphia, and Baltimore, and the public excitement was so great that there was a renewal of the land quarantines in various sections. In 1795 the fever again prevailed at New York and Norfolk, Va., and vigorous measures of protection were discussed and adopted by the authorities of other exposed towns. It would be impossible at this distant period to properly estimate the current events of the time when yellow fever first became widely epidemic at the close of the last century, had we not passed through a similar epidemic in 1878–'79. Then, as now, the disease was regarded as contagious and infectious, and all of the precautionary measures were designed to prevent the contact of the sick with the well. Maritime and land quarantines were established, and the latter was enforced with the shotgun. In most of the details the measures of prevention in 1793 were the same as in 1878, more than three-quarters of a century later.

In order to understand the first act of Congress relating to quarantine it will be necessary to refer to the exciting events of that period. The following extracts from the papers of that date, kindly furnished by Dr. J. M. Toner, of Washington, reveal the intense excitement of the communities living in immediate communication with the centers of infection:

In 1793 the citizen of "Chestertown," Pa., held a public meeting. Their first resolve was:

> "It appearing to this meeting, from the information they have received, that the said disorder (an infectious disorder which at present prevails in the city of Philadelphia) has extended itself from Philadelphia to Trenton, Princetown, Woodbridge, and Elizabethtown, on the post-road to New York, it is the opinion of the meeting that the same has been occasioned by the stages passing through those places."
>
> "2d. *Resolved*, therefore, That it is necessary and proper for the welfare of the inhabitants of this town that the stages should not pass through this place, and that notice of this resolution be given to the stage owner; and further, that if the said owner should refuse to comply with this resolution, that then the chairman shall call a second meeting to deliberate on and adopt such measures as self-preservation may in that case dictate and justify."

The mayor of New York, Richard Varick, issued a circular to the profession of that city, September 11, 1793, stating that "Great apprehensions are entertained by many of our fellow-citizens that, notwithstanding every prudent and legal precaution, the contagion of that distressing infectious disorder may be brought into this city by means of the open intercourse between the two cities, which cannot be lawfully interrupted by any power in this State." He informed them that a hospital had been provided for the sick, and requested reports in writing of every person arriving from Philadelphia who should be taken sick.

On the 17th of September, it appears that

> "The corporation, at the request of citizens of New York have come to a resolution absolutely to prevent all intercourse between this city and the city of Philadelpia, and for this purpose guards are set at the different landings with orders to send back every person coming from Philadelphia to this city; and if any persons shall be discovered to have arrived in this city after this date, it is the resolution of the citizens immediately to send them back."

On the 12th of September of the same year the governor of Maryland issued a proclamation establishing a rigid maritime and land quarantine. One provision is as follows:

> "And I have, with the advice of the council, thought further to direct that all persons coming to Baltimore Town, to Havre de Grace, to the Head of Elk, or by any other route making their way into this city from [illegible] other place known to be infected with [illegible] shall be subject to be examined, and prevented from proceeding, by the person who will be appointed for the said purpose."

The plan of requiring each traveler to carry certificates of not having been recently exposed to the fever was also adopted, as appears from the following: On the 24th September, the citizens of Havre de Grace held a public meeting

> "to take into consideration their exposed situation on the post-road from Philadelphia, where a malignant fever now rages with great virulence" and passed the following resolutions: 1. That it is our opinion that no persons should be suffered to cross the Susquehanna who do not bring with them certificates, signed by some magistrate, of their not having lately come from Philadelphia or any other infected place. 2. That the citizens of this place embody themselves and act as a guard at the lower ferry of the Susquehanna to prevent any person crossing that does not come with the above certificate.

In other instances travelers were questioned under oath as to their recent movements. The corporation of Annapolis, Md., passed an ordinance September 27, 1793, appointing a health officer and requiring him

> "To examine upon oath or otherwise all strangers that may come to this city by water or in stages, and if, upon examination, he shall be of opinion that there is no reason to apprehend that the said disease, or any other malignant disorder, will be communicated or introduced by the person or persons so examined, he shall grant a certificate or certificates to that effect." Another officer was required "on Mondays and Fridays to attend at the entrance into the city by land and give information to the said health officer of the arrival of the stage." The inhabitants were forbidden to harbor any traveler who had not been examined, as follows: "That whatever inhabitants of this city, or the precincts thereof, shall after the publication of this by-law, take or receive into his or her house or family any person who shall come to the city in a stage, or any person who shall come to this city by water, until such person shall have obtained a certificate from the health officer of the city . . . shall forfeit and pay the sum of three pounds."

The inconveniences which travelers experienced by this land quarantine may be inferred from occasional letters of correspondents. A gentleman who left Philadelphia for the South, wrote, September 25:

> "We were stopped about seven miles from Baltimore by armed men who used us with every indignity and hatred truly indicative of *malice prèpense*. These detained us in the stage from five in the afternoon until ten the ensuing morning. During this interval one of these ruffians, who appeared to be a German, snapped his piece at one of our party who seemed inclined to leave the stage with the apparent design to go among the bushes near the road. This guard in their tender mercy were pleased to hand us a piece of dry cheese on the end of a pitchfork. After this quarantine we were permitted to go to Gray's Garden and thence to perform another for the space of two days and nights."

Another writes on the same date from Philadelphia:

> "On Friday evening all the New York and Philadelphia land stages returned to this city with their passengers mortified and fatigued. They were refused a passage through New Jersey. One of the drivers had a very narrow escape with his life, being cruelly fired upon at Trenton; the ball passed within a few inches of his ears. No provisions were to be obtained on the road nor any accommodation of any kind even for the lady passengers."

In 1794 Philadelphia had an opportunity to retaliate upon Baltimore, where yellow fever prevailed severely. October 3, 1794, a public meeting was held in Philadelphia "to take into consideration the propriety of stopping all communication with the town of Baltimore during the present contagious disorder now raging in that place." At a subsequent meeting it was unanimously resolved "to stop the intercourse between this city and Baltimore, by land and water, on account of the contagious disorder now raging there; and a committee of twenty was appointed to see that this retaliation be carried into effect in such a way as to occasion the least possible injury to the public or breach of humanity to individuals." The governor of Virginia also issued a quarantine proclamation against all vessels from the port of Baltimore.

In 1795 Philadelphia also adopted a rigorous maritime and land quarantine against New York and Norfolk, Va., very much to the annoyance of New York. The governor of Pennsylvania, Hon. Thomas Mifflin, requested the Board of Health of Philadelphia, August 29, 1795, to inform him as to the prevalence of "a contagious disorder" in New York. The reply was that there was sufficient reason to believe that "a contagious fever" existed in that city, and that "the urgency of the case and the present anxiety of the citizens will justify" the stoppage of all intercourse between the cities. On August 31, 1795, the governor issued his proclamation, "with a sincere regret for the unhappy occasion," prohibiting for the term of one month, or until such prohibition shall by proclamation be lawfully removed, all intercourse between the said city of Philadelphia and the said city of New York and the said town of Norfolk, and any place or places within five miles thereof, respectively, as well by land as by water; the authorities of Philadelphia were directed,

> "with all possible vigilance and lawful authority and power, to guard the various avenues or entrances into the city of Philadelphia by land and water, so that any person or persons having been in the said city of New York or the said town of Norfolk within the space of ten days, and attempting to transgress the said prohibition by approaching nearer to the said city of Philadelphia than five miles, shall be forthwith remanded to the place or places whence such person or persons respectively came."

On the 4th of September the New York board of health protested against the proclamation, and condemned the Philadelphia board for obtaining information through other channels than its own official records. The chairman of the health committee of the New York board, John Broome, wrote to the chairman of the Philadelphia board, Richard Zittermary, September 4, alleging:

> "The committee are so thoroughly persuaded that any information the inspectors of the board of health may have received which can justify the proclamation in question is unfounded that they have directed me to request from you, as chairman of the board of health for the city and liberties of Philadelphia, copies of the several letters as far as respects such information, together with the names of gentlemen who wrote them, and to express a hope that on future occasions the inspectors of the board will do them the justice to believe them full as capable and equally disposed with any individuals of this city to give every necessary information on a subject so interesting to the happiness and interests of both places.

The Philadelphia board refused to comply, as it would be a breach of confidence.

The governor of New York, Hon. John Jay, addressed a letter to the Medical Society of New York, September 4, asking for information in regard to the alleged contagious disease. He said: "The proclamation, by exciting alarms and apprehensions throughout this and neighboring States and in foreign countries, naturally tends to produce embarrassments to the commerce of this city, and to interrupt that intercourse with the country which is at all *times necessary to the convenience* and interests of both." The Medical Society, through its president, Dr. John Carleton, acknowledged the prevalence of a fever in low situations having an easterly exposure, with virulent symptoms which characterize fevers of the malignant sort. But though "the sensibility of the public mind on a subject of this nature, giving reality to apprehension, converted the necessary efforts for security and prevention into sources of fear and terror," the collective opinion of the society was that the fever was slightly, if at all, contagious, and was the same that occurred annually, having been rendered more malignant by local causes.

Governor Jay communicated these facts to Governor Mifflin, but the proclamation was not modified, and expired by limitation.

The public feeling in New York in regard to the proclamation of non-intercourse with Philadelphia appears in the following extract, from the *Daily Advertiser*, New York, September, 7, 1795:

"The prohibition of intercourse between this city and Philadelphia is a proceeding very singular, and deserves severe animadversion. It is a *measure that, to say the least,* wears the aspect of a most unfriendly disposition, as it *naturally tends to create unnecessary* fears abroad, which may occasion an order for our vessels to perform quarantine in foreign ports to the great injury of our trade.

"It seems the board of health of Philadelphia reported to the governor the existence of a contagious disease in this city *on the* authority of private letters, without even writing *to our* health *committee* for a state of facts. This is a most extraordinary proceeding, when the reports of our committee have repeatedly informed the public that the epidemic now prevailing exhibits no decisive evidence of a specific contagion. Scarcely *in one instance* has an attendant on the sick taken the disease.

"This fact was known to the board of health and the governor of Pennsylvania, and yet the *world* is to be alarmed for the safety of Philadelphia, when the disease has not proved contagious enough to *occasion any general alarm in* New York. The disease is almost wholly local. Most parts of the city are entirely free from it. But one person died yesterday, and not more than five or six dangerously ill. In the name of common sense, must all the business of New York be impeded by the *ill-timed inquiries of Philadelphia?* Is this a generous *return for* $5,000 raised *in* New York to assist the suffering poor of Philadelphia during their great calamity? When dangers become real, will *not* the citizens of New York be alarmed? Let the public judge. The epidemic of *this city is not a new disease. It is a disease that* occurs more or less at this season *in most of the* sea-ports. It is not the disease that should occasion alarm, but its contagion, which depends mostly on local causes."

This protest of the New York papers seems very familiar reading in our time, and equally so the response of the Philadelphia correspondent of the *Daily Advertiser*. He writes, September 10:

"Our New York brethren, it seems, are very *angry at the* proclamation of our governor prohibiting the intercourse for one month, unless after ten days' absence, *and complains* that our board of health advised it, without writing to New York to obtain a state of facts. That they should be angry is very natural, but that the suspension of direct intercourse, for the present, take place, is no less just. The proclamation, however, was *not issued before sufficient* information was obtained of its necessity, though this did *not* come from the *committee of health*. On the *contrary*, every measure had been previously taken to have a true knowledge of the facts, and the result was that an epidemic fever raged in the upper part of the city, *of which* numbers died; that it was highly malignant, consequently there was every just reason to apprehend its introduction into *this city*, and self-preservation justified the measure adopted: The citizens of New York should *recollect that the first alarm* of this fever originated full six weeks since, and that it was not *until* two weeks past that the committee would even allow the existence of any fever than the *common one of the season*; that at least, when increasing mortality could no longer *justify an attempt to conceal* the truth, they did acknowledge the existence of an epidemic, but asserted its confinement to the upper party of the city. This was enough of itself, as it is ridiculous to suppose that a fever *which had* been gradually increasing for three weeks was not spread *by contagion. The yellow fever of 1793* in Philadelphia was also chiefly confined for the first month to the neighborhood of its original appearance; the rest of the city was never more healthy, as is now rung in our ears *constantly with* respect to New York. But how did this fever of Philadel*phia spread, and how is that now* spreading at New York? We all know how positively the Baltimore committee denied last year that the yellow fever prevailed there: it was the bilious fever, fall fever, prevailing fever, *unknown fever*, every name but the right one was given it; thus it is at New York. *It appears that* both our port physicians wrote for the true state of the facts, and *instead* of these we have a *lengthy disquisition upon the origin of contagion*. . . . The citizens of New York should *recollect that a burnt child* dreads the fire, and that though the intercourse is prohibited, yet that humanity is joined with our precaution, and so far from firing upon their stages, denying the passengers any food but at the point of a pitchfork, and obliging them to sleep in the woods, *nay even mixing the healthy with the* sick upon Governor's Island, all of which were done to those from *Philadelphia in 1793*, the people of New York are merely prevented from coming nearer to this city than five miles, where they may meet with every accommodation and transact their business by letter."

Richmond and Petersburg, Va., quarantined against Norfolk. At a meeting held in Richmond, August 27, 1795, it was resolved:

That the committee appointed at a late meeting for the purpose be *immediately authorized to* engage *a proper* vessel and guards, and to lay such restrictions on the entrance of passengers, carriages, and goods, by land or water, into this city from Norfolk, or any other place infected with the pestilential fever now raging at Norfolk, as to them shall appear *necessary*."

Owing to the death of a person at Petersburg, who came from Norfolk sick with the fever, it seems that "guards are now placed out, to stop all persons coming from Norfolk to this town by land or water."

(To be continued.)

THE "BRITISH MEDICAL JOURNAL."—The success of the *British Medical Journal* has been almost phenomenal. Dr. Withers Moore, the past-president of the Association, recently expressed the *opinion that* such success was largely due to the management of the able editor, Mr. Ernest Hart, who, he said, had brought *The Journal* to such a pitch of excellence that it was a sort of model journal for all the medical journals throughout the world. The staff is a large one, and includes Dr. Dawson Williams, who is an able assistant to Mr. Hart. Mr. Fowke, the general secretary, is said to have great business and executive capacity *The revenue* from advertising during the last year was $70,000, a very respectable sum, and quite an assistance to a journal of any description. In addition, the sums received for subscriptions and sales of *Journals* amounted in the aggregate to over $80,000 during the year. The *total* annual revenue is now about $155,000.—*The Canadian Practitioner.*

ANOTHER MEDICAL PRINCE.—At the University of Edinburgh, the medical commencement was held during the first week in August. Among those who received the degree of bachelor of medicine was an Indian prince, Sir Bagh[illegible]at Singh Jareja, the Thakore Sahib of Ghoudal. He is said to be the first native prince of Hindustan to acquire that particular degree, or any other Scotch medical diploma. His subjects purpose to signalize the *unusual event by* erecting a statue to *their ruler*, in his capitol in Ghoudal, in which the newly made Medical Prince will appear in the gown *and* hood of his degree, worn over his full native costume.

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SATURDAY, SEPTEMBER 24, 1892.

INTESTINAL ANTISEPSIS.

In view of the greatly extended scope and the added accuracy in prognosis with which surgery and midwifery have been, almost recently, endowed, comes the consideration of the possible utility and value of similar methods in other branches of medical science. After passing such prominent landmarks as the specific action of quinine in malaria and the salicylates in rheumatism, probably the intestinal canal offers the widest field for research. The lines upon which procedures may be laid against intestinal parasites are: *first*, the mechanical method, or that by evacuants; *second*, the antiseptic, or direct destruction and *third*, the neutralizing, or an antitoxic disposal of the ptomains produced in the canal. Calomel, for instance, may fulfill all the indications, while naphthalin could be placed only among antiseptics. FURBRINGER and BOUCHARD have studied the production and destruction of such intestinal poisons. BOUCHARD has classified intestinal antiseptics as those that are freely soluble, those that pass into solution with difficulty or remain insoluble, and lastly, those that permit of chemical change into new compounds having special advantages. Phenol, calomel and salicylate of bismuth may be severally accepted as examples of these divisions. This writer has especially maintained that of these the insoluble compounds are most useful. According to his reasoning, the best results are to be obtained from a finely-pulverized insoluble drug, that may act throughout a long distance, and one administered in often repeated small doses.

The experimentation of ROSSBACH with salicylate of bismuth would strongly strengthen the theoretical efficacy of an antitoxic treatment.

That the value of the treatment of intestinal diseases with antiseptics is not yet established, may be judged from a review of recent experiments on the bacteriological condition of the digestive tract and of the fæces during health and disease. While SALKOWSKI shows a marked decrease in the number of colonies incident to the administration of chloroform; and while FURBRINGER shows somewhat irregular results, but results which, in the main, give from five to twelve thousand colonies less per gram of fæces, with than without the administration of naphthalin and calomel, STERN, in a very careful and complete investigation, apparently overturns previous conclusions.

STERN conducted his experiments upon a recently approved method. As a test bacterium the *B. prodigiosus* was employed. This microörganism offered peculiar advantages. It is innocuous, has a resisting power similar to the typhoid bacillus, can live at body temperature and in a slightly acid medium, and upon the plate, is easily recognized by its color. The trial patient was put upon a special diet. When the bowels moved an examination for *prodigiosus* was made, the result being uniformly negative. Then an ample quantity of prodigiosus culture was administered and after two hours followed by the antiseptic in question. This was continued at regular intervals until the end of the experiment. Calomel and naphthalin in 25 grain doses showed no influence upon the appearance and disappearance of the *prodigiosus* colonies from the intestine. Camphor, chloroform and iodoform likewise gave negative results. The great care in the manipulations and in the tabulation of the results, certainly entitles these experiments to be considered reliable; but their value, as the author himself admits, is not conclusive. On the one hand, in spite of the fact that the *B. prodigiosus* offers a similarity to *B. typhosus* yet it is hardly reasonable to assume that the conditions within the intestine are the same for the saprophyte and the parasite. On the other hand, an antiseptic may give one reaction to a medicament in artificial media, and another, quite different reaction in the intestinal tract.

So far as making determinations for the pathogenic bacteria themselves many obvious difficulties at once render the subject impracticable because animals are not available. What would be invaluable data from experiments on man are entirely beyond our reach.

The demonstration of a few thousand colonies, more or less, of entirely harmless saprophytes in the intestine after the administration of an untried drug cannot be taken as sufficient reason to lay aside a line of treatment that has so many theoretical and clinical advantages. The theory is that known anti-bacterial drugs, when introduced into the digestive tract, there exert their antiseptic properties.

BAUMANN measures the activity of albumen decomposition by the amount of iodol, skatol and kresol produced. For pathogenic bacteria, the severity of the general symptoms should be in direct ratio to the amount of ptomains produced, and therefore indicate their *quantity* and *quality*. That the general symptoms of such diseases as cholera and typhoid are modified by intestinal antiseptic treatment, is evidence that some influence has been brought to bear upon the intestinal contents. That the general mortality from typhoid fever in the Paris hospitals was reduced from 35 per cent. to 18 per cent. by the use of salol and chloroform, besides the advantage of this method of treatment in minor cases of gastritis and gastro-enteritis, is still ample enough proof that antisepsis in the intestine is not without a purpose.

CHOLERA.

Since our last issue a very few cases of cholera have been developed in New York and its vicinity, but in each instance the physicians in attendance with the coöperation of the public health authorities have been able to prevent any further spread of the contagion. We have in this a full and complete proof of the value of quarantine as a protective measure against the introduction and spread of this disease.

This epidemic has shown to the world that the researches of scientific physicians have developed a positive knowledge of the cholera poison and of its method of spreading from one individual to another. That it is solely through an introduction of the poison into the alimentary canal, and is neither inhaled nor absorbed through the skin. Hence it is, that the infection is always from the use of a cholera contaminated water or food supply. We now know that the comma bacillus is able to live for a considerable, perhaps an indefinite length of time in water that is impregnated with organic or vegetable matter.

On account of its sponge-like absorbing powers, milk is one of the most frequent sources of the infectious poison, because of its almost universal use as an aliment by infants and children.

Dr. Shakespeare, of Philadelphia, has made most critical observations of the cause, course and spread of the disease, from which he formulates two laws bearing upon its spread, viz.: (1) The tendency to infection varies exceedingly among individuals, and is with the majority small. (2) Disturbed conditions of the digestive apparatus greatly increase the susceptibility of an individual, and render him more liable to an attack after exposure to the infection. From which he teaches that a healthy stomach secreting normal acid juices, is capable of destroying this infectious bacillus. If, however, this living infectious bacillus escapes beyond the lower end of the stomach and passes into the small intestine, the contents of which are alkaline, multiplication with enormous rapidity takes place, and the disease is established.

From which we learn that certain acids destroy or render the comma bacillus innocuous. Hydrochloric acid, taken in small doses during or after meals, will add to the antiseptic powers of the gastric secretions. Irregularities of diet, alkaline drinks, loss of sleep, emotional excitement, fear, mental depression, and every disturbing influence, should be so far as possible avoided, as they weaken the powers of resistance that should naturally exist in every healthy individual.

These conditions will not in any instance, in and of themselves produce cholera, but they do render the individual so susceptible, that if exposed by the passage of the infectious bacillus into the alimentary canal, an easy victim to its virulence. The positive knowledge of physicians as to these facts should cause them to faithfully instruct all health boards and public officers in their duties in enforcing upon the people the extreme importance of absolute quarantine measures in every case of cholera; of the vital necessity of a pure, uncontaminated water supply, and of attention to the preparation of food. Special watchfulness should be exercised over the food and drink of children.

Every school, public and private, should receive the practical attention of a physician, who should formally talk during a school hour to the assembled children and teachers of their duties in this regard.

This should be done with much care and tact, so as not to create a feeling of fear, or mental anxiety, but to produce a sensation of security, rest and assurance of safety for those who follow the doctor's directions. These directions are neither a hardship or a task so severe as to be difficult to carry out. The children should be taught the danger of dirt, that filth and dirt cause sickness; that sickness means pain, suffering, misery, hard times, less education, poverty and poor living; that dirt conduces to a lack of self respect and promotes bad morals; that this cholera epidemic, like every other cholera epidemic, was generated, born in filth, spread through the medium of filth and now threatens us through impure water and improperly prepared food, and the handling of dirty substances; that absolute cleanliness of person, of houses and grounds, pure water and wholesome freshly prepared food are a combined bulwark and fortification that is strong to resist an attack of this insidious enemy.

The use of hydrochloric acid diluted as a drink meals, and the avoidance of other drinks comme itself most highly as a prophylactic agent. A remedy referred to by Dr. Stewart, of Philadelphia, that might be used where it is suspected that infection might occur, is hydronaphthol. *This is a* remedy that is valuable in cases of intestinal disturbances of various kinds, which are induced by fermentative processes. Hydronaphthol may be given as a prophylactic in doses of from three to five grains, largely diluted in water, three to five times a day. Hydronaphthol is almost a specific in the treatment of dysentery, and is a valuable agent in all cases of enteric disease. Peroxide of hydrogen is another remedy that will no doubt be of great value in the treatment of cholera. It is all important that the prodromic stage should be recognized and treated as cholera.

PIPERAZINE IN GOUT.

The popular knowledge in regard to the new "gout-water," containing piperazine, is spreading, and laymen in the horse-cars have been overheard discussing the merits of the water. But it is not yet so widely understood that there are other forms of the drug in addition to the aqueous solution of the hygroscopic crystals: for example, the *Notes on New Remedies* in its Berlin letter, informs us that the chemists have been enabled to produce tablets of piperazine. These compressed tablets contain the ordinary daily dose of 15 grs. They are easily disintegrated and dissolved in water, a manifest convenience in the case of travelers and vacation seekers. A granular effervescing powder has also been produced: in this form, the drug is said to be more palatable—although the crystals should be nearly tasteless—and the patient is led to imbibe more freely of water than he otherwise would—a point which is helpful in bringing out the best effects of the piperazine treatment.

Dr. Schweninger, the well-known medical friend of Bismarck, has recently made known his experience with the drug in over one hundred cases. He states emphatically that piperazine has given relief to cases of both acute and chronic gout to an extent that has been an agreeable disappointment. No remedial substance has done so much for gouty patients, in many years of trial of many remedies, as has this new product. He considers it "an exceedingly valuable addition to our treasury of medicaments." It has succeeded in cases where "all other remedies" have been tried in vain. The relation of piperazine to uric acid has been stated in the following terms: "It has the power of dissolving twelve to fourteen times as much of that acid as lithia will dissolve."

One important point in the use of piperazine for chronic gout is regular and persistent dosage. The remedy cannot be pushed, neither can it with advantage be experimented with in a haphazard way. It requires considerable time to dissolve out the uric acid from the system, even longer than is required to quell the painful symptoms of the disease.

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of

PAN-AMERICAN MEDICAL CONGRESS.

The Committee on Organization of the Pan-American Medical Congress will issue the preliminary announcement of the Congress within a few weeks. This announcement will show that the organization has been perfected in almost every colony and country of the Western Hemisphere. The local medical societies in each of the constituent countries are made auxiliary to the Congress, which will be held in Washington, D. C., September 5, 6, 7, 8, 1893.

Dr. Reed, of Cincinnati, Secretary-General of the Congress and Chairman of the Committee on Organization, announces that after extended correspondence between himself and Dr. Maragliano, of Genoa, General Secretary of the International Congress, the date of the Rome meeting has been finally and definitely set for September 24, of next year. This gives an interval of sixteen days between the Washington and the Rome meetings, during which time an easy trip can be made from the former to the latter city. It is possible that a steamer may be chartered direct from New York to Rome.

EDITORIAL NOTES.

Keeley's Lawsuits.—Dr. Keeley has concluded to part with some of his golden gains to the legal fraternity of London. He has entered libel actions against the *Lancet* and the *Press and Circular*, in order to punish those journals for calling him a mischievous quack and inducing the friends of temperance to withdraw their partly promised support. The *Press and Circular* refused to publish Dr. Keeley's letter of vindication or explanation chiefly because the writer advanced no proof corrective of the "bad impression created by the almost universal condemnation of the so-called cure in the United States." Dr. Keeley is urged by these journals not to delay his actions for libel, and they promise to show him up.

Ownership of Prescriptions.—A recent trial in a Detroit court resulted in placing the ownership of prescriptions in the hands of the patient and not in those of the pharmacist. Testimony going to show that druggists everywhere regard the prescription as their rightful property was excluded, on the ground that the patient has the highest claim to the written formula.

Prize on Infant Therapeutics.—A bequest of Dr. Henry Roger, late of Paris, will put the French Academy of Medicine in possession of a fund, yielding one hundred dollars per annum, to be devoted to the purposes of a five-yearly prize. An award of $500 will be made for the best essay on the medical treatment of children.

An Anti-Cancer League.—Dr. Verneuil, of Paris, is said by the *Medical Press and Circular* to be the moving spirit of an association of prominent medical men, whose object is to attack the subject of cancer in concert and from all directions. The program has been devised with the utmost liberality by M. Verneuil, and he has succeeded in obtaining the cordial support of many of the best of his compatriots. Prizes and grants of substantial assistance will be made whenever deserved, and published records of work performed will be provided for whenever any advance shall have been made. Membership in the League has been fixed at about four dollars per annum; while sixty dollars will constitute subscribers to life membership. All that is needed, therefore, to ensure success, seems to be an active sympathy on the part of the profession which will bring into the movement a large number of working members, and of non-workers as well, all actuated with a zeal to overthrow cancer. There will be a small body of officers; as for example, there will be a central committee with a medical, and a surgical, and a general secretary; a similar officer will represent the department of experimental and regional pathology; also a treasurer. The coöperation is desired of all pathologists, clinicists, biologists, microbiologists and veterinarians. All explorers and geographers will be invited to obtain facts bearing upon racial and climatic peculiarities in the distribution of the disease.

It is expected that if the work moves along conformably to the plans laid down by M. Verneuil, a rich harvest of facts will be reaped, and there will be eventually congresses held upon the subject, and discussions organized upon all the causal and preventive questions therein comprised.

There is no obstacle against the formation of other Leagues in other countries, along similar lines of activity, and a cosmopolitan aspect might be added to the work of the Parisian committee, if a goodly number of large cities should volunteer to join in the same crusade against a foe that has recently been growing in strength.

The North Carolina Board of Health.—The *Bulletin* of this State Board contains a notice of the great loss "the old North State" has sustained in the decease of Dr. Thomas Fanning Wood.

The following changes in the *personnel* of the Board are announced to have taken place in consequence of Dr. Wood's death: "At a called meeting of the North Carolina Board of Health held in Wilmington, on September 7, 1892, Dr. George Gillet Thomas, Wilmington, N. C., was elected as a member of the Board to fill the unexpired term of Dr. Thomas F. Wood, deceased. Dr. Richard H. Lewis, Raleigh, N. C., was elected Secretary of the Board, and to him all communications should be addressed after October 1, 1892."

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Fifth Annual Meeting, at St. Louis, Mo., Sept. 20–23, 1892.

Dr. George H. Rohé of Catonsville, Md., read a paper upon

THE RELATION OF PELVIC DISEASE TO PSYCHICAL DISTURBANCES IN WOMAN.

The author pointed out the frequency with which bodily conditions influenced mental states. Thus a torpid condition of the intestines, Bright's disease, putrefactive processes in the intestinal canal, etc., might give rise to melancholia and other disorders of the mental functions. It is not irrational to suppose likewise that diseases of the female sexual apparatus would have a not inconsiderable influence in the production or perpetuation of mental disorders. As a contribution to the knowledge of the subject the following report was submitted:

In a hospital containing 200 insane women, 35 were subjected to vaginal examination and 26 found with evidences of pelvic diseases. In 18 of these the uterine appendages were removed with the following results:

Sixteen recovered from the operation and two died. Of the 16 recovered, three have been discharged from the hospital completely restored, both physically and mentally. In 10, considerable improvement followed the operation in both physical and mental conditions, and in 3 the operation was of too recent a date to allow any definite expression of opinion.

The mental disorder present in the 18 cases was melancholia in 6 cases, simple mania in 1, puerperal mania in 4, hysterical mania in 1, periodic mania in 2, hystero-epilepsy with mania in 1, and epilepsy with mania in 3.

The author basing his opinion upon his experience, concludes as follows:

"The facts recorded demonstrate first: that there is a fruitful field for gynecological work among insane women; second, that this work is as practicable and can be pursued with as much success in an insane hospital as elsewhere; and third, that the results obtained not only encourage us to continue in the work, but require us, in the name of science and humanity to give to an insane woman the same chance of relief from disease of the ovaries and uterus that a sane woman has."

Rufus B. Hall, M. D., Cincinnati, Ohio, read a paper entitled

A CLINICAL REPORT OF GALL BLADDER OPERATIONS.

He reported 7 cases, all of the gall bladder operations that he had made. In three of which the common duct was obstructed from 3 to 7 and 9 weeks respectively. The case with obstruction for 3 weeks recovered from the operation. The case with obstruction for 7 weeks had gall stones for 3 years before operation and at the time of the operation had a stone impacted in the common duct, and malignant disease at the head of the pancreas and obstructing the common duct. The case with obstruction for 9 weeks had a stone so firmly impacted that he had to incise the common duct for its removal. The three cases were in extremus at the time of operation from the long continued cholæmia. The cases with obstruction for 7 and 9 weeks died from exhaustion on the 3rd and 6th days after the operation. The remaining cases in which the cystic duct was obstructed recovered, making five recoveries and two deaths. With the light of his experience the author would hesitate to advise an operation in cases where there had been complete obstruction of the common duct for 7 to 9 weeks. The power of recuperation in such profound and continued cholæmia is so feeble that we can hardly hope for other than a fatal termination. The author of the paper is strongly inclined to the opinion that there is a causative relation between gall stones and malignant disease in and about the gall ducts and head of the pancreas. He thinks that the long years of continued irritation from the presence of gall stones and the consequent repeated attacks of hepititus favors the development of malignant disease in and about the gall ducts. He urges early exploration in obscure hepatic disease of a number of years' standing, even if a positive diagnosis of gall stones cannot be made, and cites a case in which he removed 91 gall stones under similar circumstances. In that case the patient had pain in the region of the gall bladder and liver but no other signs of gall stones. If early operation was made there would not be so many cases of obstruction of the common duct with the high mortality following that complication. If all of the cases operated upon where the common duct was obstructed could be tabulated, the mortality would probably be very great. On the other hand, the operation in cases where the common duct is not obstructed, the mortality is very small. These facts should be sufficient to warrant early exploration.

Honors to Huxley.—The members of the medical profession will receive with lively satisfaction the announcement of the appointment to a seat in the Privy Council of Professor Huxley.

SELECTIONS.

The Test for the Comma Bacillus.—In view of an impending epidemic of cholera in this city, and probably in the greater portion of the other cities this side of the Atlantic, I desire to give your readers the usual method of examination of dejecta of suspected patients as practiced in the Bacteriological Institute at Berlin last summer.

The articles necessary for the examination are: 1. A microscope with Abbe's condenser and the oil-immersion system. 2. A solution of fuchsin 1 gm. (Rubin) in 90 cc. distilled water and 10 cc. alcohol. 3. A few pipettes, glass rods, object-glasses or cover-glasses, and slides. 4. A few platinum wires melted or soldered to the end of glass rods. 5. A few hollow slides. 6. Ten to twelve glass plates or glass panes about 12 ctm. long and 9 ctm. wide. 7. About a dozen ordinary flat plates. 8. An alcohol lamp, or gas being preferable, a Bunsen burner. 9. A number of test-tubes with sterilized gelatine. 10. A number of test-tubes with sterilized nutrient bouillon. 11. A few Erleymer's glasses, about one-third filled with 1 per cent. pepton solution; 1 gm. pepton, 0.5 gm. chloride of sodium, 100 gms. distilled water. 12. Concentrated sulphuric acid.

The dejecta of suspected patients are scattered in as thin a film as possible on a plate, and this is carefully examined with the aid of a platinum wire for a mucous flake, "Schleimflocke," which is laid on the edge of the plate and isolated.

From this we take a piece the size of a pin's head, and sterilize a platinum loop (by drawing it through a Bunsen burner), and then rub it on a cover-glass until it is evenly divided; then remove all superfluous material by pressing another cover-glass over it, and allow it to get air-dry.

Then draw it three times through a Bunsen burner in the same manner as we proceed in the examination of sputa for tubercle bacilli, and by means of a pipette add a few drops of the fuchsin solution for about one to two minutes to the cover-glass, and then wash it off in distilled water. Then add a drop of water to the cover-glass, lay it on a slide, and examine it with the oil immersion system.

If we wished to preserve the specimen we could, after staining with the fuchsin solution, wash off the excess of stain with distilled water, and allow it to get thoroughly air-dry, then add some Canada balsam.

In some cases called "foudroyant," where the intestinal contents have a colorless or pale red color, with slimy (mucous) flakes or with a flour-soup mass, we will frequently find, especially, however, in the reaction period with cases running a slow course, no mucous flakes, but large quantities of blood. Here there are, besides cholera bacilli, large quantities of other microörganisms, and sometimes only the cholera bacilli sparingly, so it is advisable, to render a diagnosis absolutely positive, to add to microscopical examination the examination by the aid of "cultures."

Cultures can best be made in "hollow slides" by smearing the border with vaseline, then bringing a small drop (from a platinum loop) of sterilized bouillon into this hollowed groove of the slide, and inoculating this latter bouillon with the smallest possible particle of the suspected mucous flake. The cover-glass is carefully laid on the vaseline, which serves to render the groove air-tight, and also prevents the evaporation of this drop of sterilized bouillon, which is then laid aside in a temperature of 20° to 22° Celsius. The room can be heated if the temperature of the air is below this. It takes about twenty hours to have the bouillon turbid, and this slide (hollowed, containing the infected bouillon) can be examined with the oil-immersion without disturbing the culture. The best place to examine is the border line, and even if but few cholera bacilli were formerly present, they grow so rapidly that they will be easily recognized by their curved shape.

Culture Method by Schottelius: Take 100 to 200 cc. of the suspected dejecta from intestinal contents, and place them in a beaker glass containing 250 to 500 cc. of mild alkaline meat bouillon, and mix thoroughly; then let this mass stand about twelve to twenty-four hours at a temperature of 30° to 40° Celsius. After this time the cholera bacilli have usually increased in numbers, and are found on the upper layer of the fluid. By introducing at the upper layer a platinum loop, and taking out a small drop (about the size of a lenten seed), and rubbing it on a clean cover-glass, we allow it to dry thoroughly (air-dry); then draw it three times through a flame to fix it, and finally stain, as previously described, with the fuchsin solution.

Post-mortem Tests: To examine suspected intestinal contents I open the abdominal cavity carefully and ligate, with aid of two stout cords or twine, a piece of the ileum (about 3 to 4 centimetres in length), well filled with fecal contents, near the cæcum. It is well to apply a ligature close to the upper ligature, and another below the lower ligature, and cut between the two ligatures, so that the intestinal contents will not be spilled in the abdominal cavity and prevent the completion of the autopsy. It is well to cut out a piece of the intestine, about 3 to 4 centimetres in length, from the upper portion of the ileum, and to lay the excised portions into ordinary water until ready for use, *i. e.*, examination of contents. The method is the same as has been described, *i. e.*, take a small piece of flocculent mucus, about the size of a pin's head, and examine it. Gelatine stroke and stick cultures, and also potato cultures, can be made for examination. They also grow on blood serum and agar.

A practical point is the following: Koch found cholera bacilli in the water of an East Indian tank. But it is the rule that the cholera bacillus does not develop very much in our ordinary water, owing to the presence of other bacteria which easily destroy the cholera bacillus; but they do develop marvellously in sterilized water (water free from bacteria); so, for instance, soup is an elegant medium for their development.

Human beings are usually infected through the mouth—*i. e.*, through food, etc.—and it is found that if the stomach is partly filled and has sour reaction (gastric juice), the latter acts as a barrier to the infectious material.

Cholera bacilli require for their growth a mild alkaline nutrient medium, and are very sensitive regarding mineral acids.

By adding 0.07 to 0.08 per cent. of muriatic or nitric acids to a neutral nutrient solution the growth of the bacilli was stopped. This statement is found in Günther's Bakteriologie, p. 210, and is made by Kitasota.—Louis Fischer, M.D., in *N. Y. Med. Record*.

It is a noteworthy fact that not a single case of small-pox occurred during the year 1890 in the British Army. If this be not evidence of the protection afforded by re-vaccination against a malady once so common—and still disastrously fatal in armies where this precaution is not vigorously enforced—then logic and reason are mere accomplishments.—*Medical Review*.

Unfit for Colonization.—An agent of Baron Hirsch reported that the Jewish peasants in the Odessa district are so degraded that the Argentine Republic would not allow them to be sent to the Jewish colony there, and that it is therefore expected that they will be sent to the United States.

BOOK REVIEWS.

A Manual of Diseases of the Nervous System. By W. R. Gowers, M.D., F.R.C.P., F.R.S. Second edition, revised and enlarged. Vol. 1, Diseases of the Nerves and Spinal Cord. Philadelphia: P. Blakiston Son & Co.

The work of Dr. Gower's in its first edition has been so long before our readers that we do not think an extended and critical review of these pages is needed at this time. The title page says that this second edition is revised and enlarged; a comparision with the older work shows that indeed it is a new edition and not a reprint, as is too often the case.

A careful examination shows that the author has brought to his task a wealth of clinical experience and such a profound grasp of the philosophy of medicine, that his work easily ranks first among the English treatises on diseases of the nervous system.

The typography of this, the American edition, is only fair, the paper is poor, and the cuts are most of them blurred and indistinct. It is to be regretted that so valuable a work does not come to us in a better dress.

MISCELLANY.

S. D. Gross Monument Fund.—Dr. John B. Roberts, Treasurer of the American Surgical Association, acknowledges the receipt of the following contributions to the Gross Monument Fund. Contributions are hereafter to be sent to the Gross Monument Committee of which Dr. J. R. Weist, of Richmond, Ind., is Chairman.

Dr. Douglass Graham, Boston	$ 5
Dr. Solen Marks, Milwaukee	20
Dr. L. C. Lane, San Francisco	50
Dr. A. H. Plummer, San Francisco	20
Dr. C. Cushing, San Francisco	20
Dr. O. O. Burgess, San Francisco	20
Dr. Jos. O. Hirshfeider, San Francisco	20
Dr. L. L. Dorr, San Francisco	20
Dr. Jas. Simpson, San Francisco	20
Dr. Henry Palmer, Janesville, Wis.	10
Dr. Gibson, Janesville, Wis.	5
Dr. Mills, Janesville, Wis.	5
Dr. Pember, Janesville, Wis.	5
Dr. Whiting, Janesville, Wis.	5
Dr. Robt. McLean, San Francisco	50
Dr. Francis L. Town, U. S. Army	20
Dr. Basil Norris, U. S. Army	20
Dr. G. L. Simmons, Sacramento	1
Dr. C L. Simmons, Sacramento	1
Dr. N. R. Cluness, Sacramento	1
Dr. N. R. Cluness, Jr., Sacramento	1
Dr. C. B. Nichols, Sacramento	1
Dr. A. E. Brune, Sacramento	1
Dr. M. H. Woolsey, Sacramento	1
Dr. G. A. White, Sacramento	1
Dr. C. E. Fowler, Sacramento	1
Dr. W. H. Baldwin, Sacramento	1
Dr. M. Gardner, Sacramento	1
Dr. T. W. Huntingdon, Sacramento	1

Dr. C. F. McGahan, Chattanooga, Tenn., has removed to Aiken, S. C.

Dr David Stainrook Booth died at his home in Marissa, Ill., September 10, aged 64 years.

Tri-State Medical Society.—The regular annual session of the Tri-State Medical Society of Illinois, Iowa and Missouri will convene at Kahoka, Mo., Tuesday, Oct. 4, 1892. Members of the profession are cordially invited to be present.

1. Roll call; 2. Reading of minutes; 3. Proposals for membership; 4. Report of committee on credentials; 5. Resolutions introducing new business; 6. Selection of next place of meeting; 7. Reports of special committees; 8. Report of treasurer; 9. Election of officers; 10. Miscellaneous business; 11. Reading of papers.

List of papers:

1. Uterine Fibroids and their Treatment, by J. H. Beucler, M.D., Revere, Mo.
2. Dietetic Treatment of Dyspepsia, by J. R. Hollowbush, M.D., Warsaw, Ill.
3. Sanitary Science *vs.* Epidemics, by Geo. P. Neal, M.D., Ft. Madison, Iowa.
4. Thaumaturgy in Medicine, by J. M. Shaffer, M.D., Keokuk, Iowa.
5. Intussusception, by J. H. Coulter, M.D., Summitville, Iowa.
6. A Case of Purulent Pleurisy, by H. C. Young, M.D., Bloomfield, Iowa.
7. Professional Secrets, by W. R. Allison, M.D., Good Hope, Illinois.
8. The Physician and his Compensation, by O. F. Pile, M.D., Memphis, Mo.
9. Variations of Gestation, by T. C. Hays, M.D., Vincennes, Iowa.
10. The Hæmatozoan of Malaria, by J. Fred Clarke, M.D., Fairfield, Iowa.
11. Operative Treatment of Intra-Cranial Lesions, by C. E. Ruth, M.D., Muscatine, Iowa.
12. Obstetrics, by Calvin Snook, M.D.. Fairfield, Iowa.
13. The Physician as an Educator, by W. V. English, M.D., Keokuk, Iowa.

J. M. Ball, M.D., *Sec'y.*

The Mississippi Valley Medical Association will hold its eighteenth annual session at Cincinnati, Wednesday, Thursday and Friday, October 12, 13 and 14, 1892. The program is a valuable one, containing many of the most prominent names in the profession our country affords. It covers every department in medicine. The attendance will be unusually large, as Cincinnati is the centre of population of the United States. Not only the scientific, but also the social part of the meeting will be of the highest order. The interest of the Convention will be augmented by the meeting of the gentlemen interested in the Pan-American Medical Congress, also other bodies of medical men. Dr. Benjamin Ward Richardson has written his earnest desire to be present. The Association will be just in time and just in line for many of the gentlemen *en route* for the American Public Health Association in the City of Mexico. Among the many prominent gentlemen who are expected to read are the following: Dr. Hunter McGuire, Richmond, Va., President of the American Medical Association, the address on Surgery; Dr. Hobart Amory Hare, Professor of Materia Medica, Jefferson Medical College, Philadelphia, the address on Medicine.

C. A. L. Reed, M.D., President, *Cincinnati.*
E. S. McKee, M.D., Secretary, Cincinnati.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from September 10, 1892, to September 16, 1892.

By direction of the Acting Secretary of War, a board of medical officers, to consist of Lieut.-Col. Chas. H. Alden, Deputy Surgeon-General; Lieut.-Col. Geo. M. Sternberg, Deputy Surgeon-General; Lieut.-Col. Wm. H. Forwood, Deputy Surgeon-General; Capt. Wm. F. Carter, Asst. Surgeon, is constituted to meet in New York City, on October 3, 1892, for the examination of candidates for admission into the Medical Corps of the Army, and for such other business as the Surgeon-General may desire to bring before it. By Par. 9, S. O. 43, A. G. O., Hdqrs. of the Army, September 9, 1892.

Major Henry M. Cronkhite, Surgeon (Ft. Trumbull, Conn.), will proceed without delay to Sandy Hook, N. J., and take station at that place for duty with the Government employés thereat, under telegraphic instructions of this day from the War Department. This detail will continue [illegible]ing the encampment of civilians landed at Sandy [illegible] from infected vessels at quarantine in New York Ha[illegible] S. O. 123, Hdqrs. Dept. of the East, Governor's Is[illegible] New York City, September 9, 1892.

First Lieut. Ashton B. Heyl, Asst. Surgeon U. S. A., granted leave of absence for fifteen days.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending September 17, 1892.

P. A. Surgeon C. T. *Hibbett, detached from* receiving ship "Franklin," and wait orders.

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American Medical Association

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ORIGINAL ARTICLES.

THE RELATION OF PHYSICAL VIOLENCE TO HERNIAL PROTRUSIONS THROUGH THE ABDOMINAL WALLS.

THE PHYSIOLOGICAL, PATHOLOGICAL AND MEDICO-LEGAL ASPECTS OF THE QUESTION.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY THOMAS H. MANLEY, A.M., M.D.,
VISITING SURGEON TO HARLEM HOSPITAL, NEW YORK.

Shortly after my advent into the active practice of my profession, a case came under my observation, in which, it was alleged that the patient, who then, had a large, inguinal hernia, sustained it, solely, through an assault. As the patient was a very old man—about 70, or 75 years old—in consequence of the castigation he had borne, in connection with the infirmities associated with the senile state, he was confined to the house, considerable part of his time, remaining in bed. After ailing for a month or two he died.

It is unnecessary for me here, to note the gross provocation which incited his assailant to belabor him; nevertheless, it is *apropos* and important, to state, that no inordinate violence was employed. The old man was hoeing by the roadside; when a man came along, driving cows to pasture, when one of them crouched her neck and bit off the leaves of a growing plant. For this, the old man ran after the animal, hitting her on the back several times with his hoe. The owner of the cows who was a middle-aged man, was carrying a birch switch in one hand, and becoming enraged, struck the offender with it several times; finally knocked him down and kicked him. There was no weapon employed, nor, any violence, other than would happen in any ordinary assault. The farmer unfortunately, was a thrifty, prosperous man and had accumulated some, few thousand dollars, worth of real estate; and hence, there was some fine picking for the lawyers. Civil and criminal suits were commenced, almost simultaneously; the unfortunate man, being first tried and condemned by the newspapers and then as a matter of course, adjudged guilty of felonious assault and sentenced to prison. He fared no better with the civil suit; for, such heavy judgments were brought in against his estate, that it required the practical sacrifice of it, to liquidate them. In this instance the basis of the whole case, rested on his hernia. It was sworn to, by the attending practitioners that the hernia resulted from the violence, borne in the altercation; that he suffered great and unusual pain, in consequence of the hernia; and, that it was the final cause of his death. No post-mortem was made to substantiate these allegations. I saw the case once in consultation and was confident, from a critical examination, that the hernia was an 'old pathological infirmity. Although I had had no special opportunities to acquire a special knowledge of the morbid anatomy of inguinal protrusions, at that time, yet I was convinced from the physical characteristics, that this one, that this man suffered from, was a very old one; and hence, my impression, that the whole proceeding from the beginning to the end, was unfair, iniquitous and scandalous; hence, I determined that should occasion ever offer, I would endeavor to prove to my own satisfaction, that the existence of a hernia dependent on a simple assault or ordinary violence is scarcely ever a possibility. The opportunity, came sooner than I expected; and now, after having examined and operated on nearly every species of hernial disease, I am able to say, *without any qualification* whatever, that hernia is *never* attributable to traumatism alone; unless, the violence be applied by some hard, heavy, sharp-pointed instrument or substance which either punctures or rents the abdominal wall; and that, when a hernia appears, after the application of ordinary force, it can always be demonstrated, that it had previously existed, the accident or injury being an incident only, in its evolution.'

Since then, in the event of injury, accidentally, or intentionally inflicted, the unscrupulous or vindictive, may make the presence of a hernia, the pretext for a criminal or civil action, and as the judiciary, must rely on surgical science, in a large measure, for such knowledge or information, as will render a fair and just decision possible, it behooves us, to give this subject of traumatic hernia, the searching and analytical study, the importance, which it merits.

This may be best accomplished, mainly in two ways. The first, is, by the grouping together, as far as possible, the isolated cases of a great many observers; in which, violence has seemed the predominating element, in the causation of herniæ; and secondly; by examining into the structural development of those canals or vents, through which the abdominal viscera escape; their normal, natural contour, and their abnormal, anatomical configuration. Surgical literature is rich, in extensive and valuable observations, by many of our most eminent and scientific authorities, in connection with the latter; but the literature of the former is scant. Whether, it is, because authors and practitioners failed to report their cases; or, that it was the accepted *dictum*; which was admitted without question, that physical force may in itself, suddenly cause hernia; I am unable to say. Or, is it to be ascribed to an unwritten, but nevertheless well established view, that physical force is but supplemental, in the etiology of traumatic hernia?

It is a matter of custom, with the laity, to attribute, in the majority of instances, their ruptures to various kinds of accidental injury; as strains, jumps, blows, falls and compression force, variously applied. But, how far physical force in itself, has been regarded, by surgical authorities as constituting a sole, or even predominating factor in hernial protrusions, is important to ascertain, while endeavoring to make an accurate estimate of violence alone in the disease.

In order to fully inform myself, in all those forms of hernia induced by physical force, alone, I made a thorough examination, of everything, which I could find, in one of most complete medical libraries in America.* Consulting all the works I could find, ancient and recent; on[1] general surgery,[2] medical jurisprudence and those devoted,[3] specially to the subject of hernia.

And, there, to my chagrin and disappointment, I was able to glean almost nothing. There, from the many eminent authors on medical jurisprudence, on hernia and surgery, I was unable to find a *single case* of purely traumatic hernia, recorded. Certainly, much was expected from those. of extensive military experience; those who have seen force applied in a thousand forms; particularly in the charge and in retreat, when horses, men and artillery tread and crush the disabled under them. In the explosions of shells and mines; when men are hurled, instantaneously, from their feet, in every direction; when limbs are blown off, internal organs ruptured, the body palsied, the brain and spine violently concussed; and when, from such commotion one or more of the special senses, as the sight, hearing, or speech is forever lost, we would indeed look for the appearance of hernia, as one of the most frequent of all sequelæ, to such violence and shocks. But, Baron Larry in his memoirs is silent on this subject; and, in our own exhaustive "Surgical History of a Civil War"; a war in which, it has been estimated that a million human lives were sacrificed, not a line can be found, on the subject of violence as a cause of hernia.

Sir Astley Cooper the greatest English authority of his time, in the most populous, the largest industrial and commercial centers of the world, is silent, on hernia of this species; so that, with practically very few exceptions, the authorities are barren on the subject.

The venerable Gross, was the only American author who vouchsafed anything, whatever, on it; when writing on hernia. He said, "hernia is sometimes the immediate result of external violence; as a *blow* or a wound, splitting or severing some of the component parts of the abdominal walls."

Spence denies physical force only, as a cause of hernia, by the laceration and giving way of structures as is seen by the context. He says: "Except in direct, penetrating wounds, protrusion from laceration of the abdominal wall, must be very rare; if it ever occurs." Hence, the popular term, "*Rupture*," so frequently employed to designate this disease, is an improper one, and likely to mislead, as to the true state of matters.

The vast majority of authors, although they divide the causes of hernia, into predisposing and active, they usually limit themselves to a consideration of the former; and, on the latter, speak only, in such a dubious undecided manner, that their opinions carry little value with them. There were quite a few authors on general surgery here quoted, who do not, even mention the subject of hernia. This is conspicuously the case, in one of our most recent text books.

The terrible mortality which attended surgical operations for hernia before the days of anæsthesia and wound cleanliness, probably had much to do with explaining the general dearth of knowledge of the etiology and of the various phases of morbid anatomy which constitute the ground work of all abdominal hernia. Paul Sègond in his admirable treatise on the surgical history of hernia, tells us, that, in those cases of reducible hernia operated on, in the pre-antiseptic times, death commonly followed, due to gangrene, erysipelas, tetanus, hæmorrhage and shock; which explains, why so many, when called to extend measures of relief, to those, whose herniæ depended, apparently on traumatic influences, neglected not only to operate, but to follow up their cases, by post-mortem examination, in the event of death.

From the foregoing, then, we can come to but one conclusion with reference to herniated protrusions developing, as result of physical force. I have neglected to make a general appeal to surgeons for information on this special feature of hernial etiology, but trust that the presentation of the subject, will be enough, to call forth from different sections of this country, and others whatever experience, those who have had the best opportunity to enjoy, can offer. The question should be so definitely settled, that hereafter, we should seldom hear of traumatism *per se*, ever giving rise to herniæ.

But, if force, in itself is disallowed as the only cause in producing a hernia, yet no one of experience can deny, that it plays an important *rôle* in hastening its full development: aggravating its conditions, causing strangulation; being a possible cause of laceration of the sac; of hæmorrhage, inflammation or gangrene of it.

I have never seen a case, in which there was proof, that a hernia was forced through any of the natural passages, by inflicted violence; among those who have been run over; who have been crushed in various ways, have fallen from a considerable height or sustained violent blows over any part of the abdomen.

Many have come under my observation, who have sustained mortal thoracic and abdominal lesions, in consequence of great and sudden force; after which, in different cases, have been discovered, rupture of the various solid and hollow organs. But no herniæ were ever associated with these ruptured organs. This, however, is not sufficient to prove that it may not ever occur; for it is only the experience of one; nevertheless, I have taken good care, to fortify it by an extensive review of the literature on the subject and hence, must conclude that a hernia is very rare at all events, under these circumstances.

A great many cases, however, will come under our care, in which the patient will tell us, that their hernia appeared for the first time, after a great strain, or violent muscular exertion; as lifting, gymnastic-exercises, and straining of various kind. They very naturally assume, that this temporary violence is the sole cause of their infirmity; that something has given way, torn through, or *ruptured*.

Many of them, on the most minute oral examination will deny that they even had a fullness of any description, whatever, in the herniated area. Their attention is first called to it, by the volume of the hernia; by pain or soreness over it. It may be, that some days elapse, before it is discovered, unless suddenly strangulated. Sometimes, the force applied, is so infinitisimal, that one would be inclined to deny it as a causative factor. As an apt illustration, I may cite the case of a woman, forty years old, in good, previous health, who was one day, out raking in her yard, when her rake fell from her hand to the ground. In stooping to pick it up, she said, she felt something give way, low down on the back. This was succeeded by colicky pain, great bodily weakness and vomiting. She was first treated, for intestinal obstruction, but, at the end of the first day, her true condition was recognized.

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Now, when it is apparent, that so little, insignificant force as that which so often causes a strangulation may increase the volume of a hernia one can easily conceive of a case, in which, on very moderate force, the application of it, being accidental or intentional,a hernial protrusion may appear, either strangulated or not, and after which, for malice or gain, the patient or his friends institute civil or criminal proceedings,against the individual or corporation,responsible for it.

Here then, is a supposititious case, in which several interesting questions may rise;—and I may say, in passing, that we may be prepared at almost any moment to deal with actual ones,when one of the first questions will be: was the injury a *causa sine qua non*, or a contributory incident only? The first, has already been answered, the second must be answered in the affirmative. For it may be laid down as a rule, that the application of physical force is commonly an active factor in effecting the full evolution of a hernia; or in aggravating the condition of one pre-existing.

The Effects of Physical Force on Pre-existing Herniæ; Or, on Those Pre-disposed to Hernia.—The injured may suffer as a result of violence applied directly over the seat of a recent, or an old, incarcerated hernia. If strangulation have immediately ensued, it may be alleged to have followed this applied force, or sometime later.

Certainly, the integument over a hernia will show the evidences of contusion, from kick or blows, in the same degree as those situated elsewhere; but, that one's life is actually imperilled by the imflammatory changes established in the tissues immediately contiguous with the hernia,must be conceded. In this instance, much will depend on the character of the hernia, itself; its size, situation and consistence. We can easily understand, why in an old epiplocele a considerable bruising might be borne, without any serious sequelæ. While, on the other hand, over a recently extended knuckle of intestine, much less contusion might be followed by serious results. It might be claimed that the hernia never appeared before the injury and that strangulation followed, solely, as a sequence of the inflicted violence.

It cannot be denied that there are numerous cases of strangulated hernia, in which the patient is totally ignorant of ever having any sort of hernial disease before his life was suddenly endangered. But, he may have had a visible protrusion, nevertheless, which in consequence, of it never having given him any pain; being of small size and covered by pubic hair, has escaped his notice. Yet, even assuming that there positively was none at the time of accident still there was the predisposing, anatomical congenital imperfection or defect of development.

In a case of incarcerated strangulated scrotal hernia, in which it is alleged that the sole provoking cause was direct violence, applied immediately over the fulness, can we, from the presence of the physical characters under our eyes, in operating or at post-mortem examination, determine whether the state of the tissues, is attributable to a traumatism; or to pathological changes? This is of very great importance to ascertain in a civil or a criminal case.

Judging *a priori*, one would naturally suppose that in these times of refinement and accuracy in diagnostic methods, that it would be a very simple matter to differentiate one condition from the other.

If a case were seen immediately after the injury, one might possibly, then and there be able to say whether the external appearances indicated violence.

The presence of discoloration of the integument and bloody extravasate into the loose connective tissues, with patches of ecchymosis would point to traumatism, but, this would be all. After serious inflammation commences in the sac, there is practically nothing, which will in any way, aid us, when discoloration is absent in, separating the pathological from the traumatic. In both, we will, after a very short time, find the skin and cellular membrane thickened, traumified and sensitive; the sac thick, turgescent and distended with a serous,or sero-sanguinolent fluid; the intestine, congested, inflamed or gangrenous. There is then, pathologically, no definite line, by which, a pathological strangulation, can be definitely identified, from one induced by violence, inflicted in any way whatever; short of a penetrating wound. One must, then always exercise great circumspection in many of these cases of injury, in the male or female; in which the groin, the scrotum or the labia are involved, if he would avoid mistakes in treatment, unnecessarily alarm the patient or magnify the importance of the injury. Three years ago I was called to see a young married woman; who while standing on a chair, hanging pictures, slipped and fell, her perineum coming astride the back of a chair. When I reached the house, I found two physicians in attendance. She had been anæsthetized; and taxis had been persistently employed, to reduce a large hernioid mass, in the right labium; but, they utterly failed; when, I was sent for. In examining the case, I found that what they were trying to reduce was a large hæmatoma. Now, in the male scrotum, this mistake is never likely to occur: because of effusion of blood into the tunica-vaginalis or the fascia-spermatica, extending up, to the external inguinal ring. An acute orchitis, complicated by an epididymitis and free cellulitis, with an œdematous, condition of the tissues, might, without a careful examination, be mistaken for hernia, after injury. In every hernial case, coming under our observation, in which violence is alleged, the most thorough and complete examination, is always imperative. In the course of examination, if we are in doubt, the most skilful and experienced surgeon, obtainable, should be sought for, to aid in assuring accuracy of diagnoapplied. But, how far physical force in itself, has been regarded, by surgical authorities as constituting a sole, or even predominating factor in hernial protrusions, is important to ascertain, while endeavoring to make an accurate estimate of violence alone in the disease.

In order to fully inform myself, in all those forms of hernia induced by physical force, alone, I made a thorough examination, of everything, which I could find, in one of most complete medical libraries in America.* Consulting all the works I could find, ancient and recent; on[1] general surgery,[2] medical jurisprudence and those devoted,[3] specially to the subject of hernia.

And, there, to my chagrin and disappointment, I was able to glean almost nothing. There, from the many eminent authors on medical jurisprudence, on hernia and surgery, I was unable to find a *single case* of purely traumatic hernia, recorded. Certainly, much wás expected from those. of extensive military experience; those who have seen force applied in a thousand forms; particularly in the charge and in retreat, when horses, men and artillery tread and crush the disabled under them. In the explosions of shells and mines; when men are hurled, instantaneously, from their feet, in every direction; when limbs are blown off, internal organs ruptured, the body palsied, the brain and spine violently concussed; and when, from such commotion one or more of the special senses, as the sight, hearing, or speech is forever lost, we would indeed look for the appearance of hernia, as one of the most frequent of all sequelæ, to such violence and shocks. But, Baron Larry in his memoirs is silent on this subject; and, in our own exhaustive "Surgical History of a Civil War"; a war in which, it has been estimated that a million human lives were sacrificed, not a line can be found, on the subject of violence as a cause of hernia.

Sir Astley Cooper the greatest English authority of his time, in the most populous, the largest industrial and commercial centers of the world, is silent, on hernia of this species; so that, with practically very few exceptions, the authorities are barren on the subject.

The venerable Gross, was the only American author who vouchsafed anything, whatever, on it; when writing on hernia. He said, "hernia is sometimes the immediate result of external violence; as a *blow* or a wound, splitting or severing some of the component parts of the abdominal walls."

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If the pathological condition immediately resulting from injury, partakes of a mixed character, then, unless a full history of the patient's antecedents is obtainable and if we are not permitted to watch the case, over a considerable period of time, an absolute diagnosis will be impossible; a correct knowledge of the precise share, which the chronic pathological condition, or the recent traumatic influences played in the causation, being impossible to estimate.

The Diagnosis of Hernia, Inguinal, Femoral or Umbilical, at Varying Intervals after Injury, which are said to be of a Traumatic Origin.—So far, it must be conceded, that the infliction of physical force, *in itself*, can very seldom cause an abdominal hernia, without at the same time, inducing mortal changes.

While this is indisputable and non-questioned, it must likewise, be clearly understood, that when a tendency to hernia exists; when the formation of one has begun, or one is on its way, through the crural or inguinal canal, force suddenly applied, in various ways, over the abdominal walls or the portals of exit, may, only hasten its full development; yet, it is immature and might never, without such violence, have made its appearance outside the external ring; nor made the wearing of a truss a necessity. Nor, can we doubt, that in those atrophic, diminutive protrusions, lying along the floor of the crural-canal, or just emerging through the external ring, the abdomen, striking with great force, or being struck, concussed or suddenly jammed and its contents compressed,there is a tendency to escape in the direction of the least resistance; when these small painless hernia, may quickly increase in volume and practically invalid the injured, in varying degrees; thereby greatly diminishing his physical usefulness throughout life.

When such cases are brought to our notice great vigilance and circumspection are demanded of us. A moderate swelling in the groin may be made the pretext for an action, particularly when the patient happens to have been on a train, which collided or run off the track; or was one of a few, who escaped in some terrible disaster, attended with considerable loss of life, occasioned, through preventable causes. One of the first questions, which we should ask ourselves, in this class of cases, when the patient is presented to us, is, *has this man a hernia, at all ?*

At first sight, this question might seem a ridiculous one,for it might be asked,is it possible that we are not always able, to diagnosticate with positive certainty, a hernia, from glandular enlargement or neoplastic formation? In the present state of our knowledge, this interrogative, must be answered, in the negative.

For there are cases of this description, wherein hernia is suspected; but it cannot be diagnosticated. This fact cannot be too strongly emphasized; as a knowledge and recollection of it, might often prevent suit for mal-praxis, resulting possibly in heavy losses to the physician.

Within a year, a gentleman, a physician himself, came under my observation, who had been examined by the most skilful surgeons in Brooklyn and New York; some alleging that he had a hernia; others that he had not, while there were a few, who candidly admitted, that they didn't know, what the character of the fullness was. No! I am convinced, that there are few surgeons, of much experience, who do not now and then, meet cases in which, certainty of diagnosis, in inguinal or scrotal swellings is impossible.

Again, admitting that there is hernia, is it *sui generis*, pure and simple a visceral protrusion? This cannot be answered affirmatively either, in every instance.

Such a case came under my care two years ago, in my hospital service. A patient entered, giving a history of injury; from strain as he thought. He was in considerable pain and the house-surgeon thinking strangulation present, proceeded to relieve him by an operation; but when he came on the *fascia propria*, he was rather confounded with what came up into the incision. He closed the gap temporarily, in the tissues. His intervention, probably, by the loss of blood, gave the patient great relief. The next day, I re-opened the wound and came down on a large sarcomatous mass, which had developed in the lymphatics of the extruded omentum.

But, we will meet with well marked, easily defined reducible and irreducible hernia, traumatism, being alleged as the sole causation.

Now are those physical changes of such a character, always present, as will aid us in determining just what rôle physical force played, as an etiological factor? There are, and, there are not. Should we see our patient, within twenty-four hours after injury; then there should be such constitutional and local indications present, as should assure us with considerable certainty, of the nature and extent of the injury borne. On the contrary, if we do not see the case for weeks or months after the violence was sustained, we are powerless to say just what part it exercised, if any. But, by oral examination and a vigorous examination into the condition of the inguinal parieties, the apertures, the spermatic cord, testes and scrotum, we can glean information, which will go a great way, in confirming our diagnosis and revealing the true character of the case.

The following is an instance to the point. Last May, 1891, a well known lawyer in this city, sent a client to me, who told me that while driving a pair of horses, on a street-car, he was run into, by a very heavy express-wagon, the pole of the wagon, hitting him on the abdomen, in the groin and throwing him off the front platform of the car. After the collision he was brought to a hospital and remained over night. On inquiry, I learned, that he did not call the attention of the house-staff to the hernia which he then had, nor did he discontinue his usual work. When he came to me, he had a small incarcerated inguinal hernia on the right side, which he said was caused by the injury. The accident had occurred three months before I saw him.

Now, in comparing the size of the testis, the right was found much smaller then its fellow, on the other side. The spermatic veins were varicose on the same side, and all the elements of the cords were much hypertrophied and of a firm in-elastic feel. I sent my conclusions to his lawyer. There was no suit.

The condition of the testes and the spermatic cord furnish us, with almost incontestable evidence as to the age of the hernia. This is all the more evident, if the patient have worn a truss over a considerable period of time. The pressure of the bulb will have caused a localized thickening and induration of the skin, over the area of it, which corresponds with the internal ring; which is quite apparent, when we contrast it, with the sound side. In connection with this, too, we may look for changes affecting the circulation and nutrition in the cord and testes. The testis owing to trophic changes in the cremasteric muscle, will hang lower than the opposite. The gland will be found changed in texture and often of a diminutive size. It has a soft doughy feel and the epididymis is often so shrunken as to be scarcely made out. In a hernia, the full development of which has been accelerated by an injury, we should, if called, any time, within a week after this has been sustained, find a series of symptoms accompanied by definite pathological changes, of a clear and unmistakable character. There should be evidences of recent tumefaction over the side of the scrotum involved, a thickening of the sac and temporary occlusion of the inguinal canal by a plastic exudate. It will be well to note the presence or absence of peritoneal tenderness in the direction of the iliac fossa, elevation of temperature, acceleration of the pulse, diminished appetite and other symptoms indicative of re-action after shock and local disorganization. If these phenomena are present, we must assume that violence has been sustained. If they are all absent we should then, pronounce our patient's condition, as not having been caused by concussion force; we besides, should aid in unmasking the real character of the impostor and teach him a lesson, that the members of the medical profession are not yet, so degraded, that for any pecuniary consideration, however large will they permit themselves to assist others, in an unjust extortion of money. Nevertheless, that we may commit no injustice, we should always hesitate, and never, finally decide, until a most scientific and critical examination has been made, in every case.

I do not know from *personal* experience, that the herniæ of women are very liable to aggravation from traumatic influence; although it would seem, that such must be rarely the case. The etiological groundwork of female hernia, is totally unlike that in the male sex. They have, practically, no enclosed outlets, from the abdominal cavity. Their femoral herniæ must always be attributable to mal-development; the appearance of the descending viscera being nothing more than an incident. They are certainly not dependent on compressive force; for we never see them occur as a cause of violent or protracted labor, except, perhaps, in the umbilical. Indeed, some of the most intractable of them, being in unmarried, or sterile women. The expulsive act of parturition is attended with very considerable abdominal compression. Not infrequently, when the impatient accoucheur has given up, in despair with forceps traction; the uterine and accessory abdominal muscles, after a short rest, gather fresh force and land the child safely into the world. We can conceive of nothing greater, short of mortal force; yet we, have no hernia, resulting. The same may be said, of female, inguinal hernia. A traumatism cannot cause a sudden development of it. But this is not the case, with the umbilical variety. This hernia without question, often is largely dependent on pregnancy and delivery. The same predisposing element, however, existing, as in other varieties of hernia, but here alone, do we find one, which seems to have an immediate relation, with a physiological condition. Precisely how the parturient state favors umbilical hernia is by no means clear. It certainly leads to that condition, in some other manner than through pressure of the gravid uterus or the expulsive effort of labor, for it is not, in instances specially wherein the uterus attains to the greatest size, or in cases of tumors or ascites; nor either, after tedious, difficult labors, that an exomphacele most frequently follows. Nevertheless, it is only too evident to every one, that after an umbilical hernia is discovered, any sort of sudden force may lead to its increase in volume and, owing to its exposed position it is very liable to injury. But, we will find on dissection, in the vast majority or these extrusions at, or near the navel, that they have formed solid, resistant beds for themselves, by adhesions and adventitious formation; so that they are effectually walled in, and, in many cases not apt to attain greater volume, only under the most extraordinary circumstances. It is well to remember, that in many old umbilical herniæ, their integumental covering is so thin and brittle, through the effects of long, continued pressure, that a moderate blow immediately over the hernial convexity, might easily cause rupture, hæmorrhage, or peritoneal inflammation.

In conclusion, it may be stated with emphasis and certainty, that the direct application of concussive force, is never a primary cause of hernia. That its effects are always secondary and consecutive. That, when a hernia is already present, violence, which might, in the sound, whole individual be borne with impunity, may, if accidentally applied over viscera, which have escaped from the abdominal cavity, cause very painful or mortal consequences. Hence, the herniated, is not a whole, perfect being, so that a comparatively trivial force, which in the normally developed would make no impression, might with him, be followed by serious results.

With those cases, in which violence *per se* is alleged as the cause of the hernia, the condition of the testis, in the male, the spermatic cord and inguinal region, together with a rigid inquiry into the patient's personal and antecedent history, will tend, to throw much light on his condition.

There is no evidence, that ordinary, bodily traumatisms aggravate the herniated condition; except, in those cases, in which, injury is applied immediately over the herniated area.

A more general knowledge of the above facts, by the general mass of the profession, should, while in no way interfering with the fullest measure of justice being meted out to the injured or crippled; nevertheless, greatly restrain those who have a hernia, from making it the sole ground, for demanding extortionate sums, or instituting criminal proceedings.

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Discussion.

Dr. I. N. Quimby, of New Jersey, agreed in the main with Dr. Manley, but claimed that there should be taken into account the individual's constitution, and that in cases of doubt in criminal violence the doubt should be solved against the criminal.

Dr. J. G. Kiernan, of Chicago, took issue with Dr. Quimby. The physician had nothing to do with the consequence. His duty was to state the facts found.

Dr. H. N. Moyer, of Chicago, cited a case of ventral hernia in which suit was to be brought for damages. He asked for diagnostic evidence in such cases, and as to the value of traumatism as a predisposing factor.

Dr. Manley, in closing, said that in the case of ventral herniæ predisposing factors existed.

"CEREBRAL ANATOMY."

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY WILLIAM FULLER, M.D.,

OF GRAND RAPIDS, MICH.

Mr. Chairman and Gentlemen:—I have first to thank you for the permission to bring these specimens of anatomy before the Section, inasmuch as they are presented without previous notice, and is therefore a trespass upon your kindness.

I will next ask your indulgence, since I came here wholly unprepared to make any remarks upon them, for the reason that they are casts which are uncorrected by careful dissections which I hope to make in the near future as my time will permit. You will please to accept them as an illustration of what may be accomplished in this line of our work, which I think you will agree with me is important to the progress of our science, since until an exact anatomy of the central nervous system is acquired by the general practitioner so that he is able to make an intelligent post-mortem examination, and describe correctly the location and extent of lesions, our progress must necessarily be slow.

The clinical history of very important cases is neglected, and at present post-mortem examinations are negligently performed on account of the want of anatomical knowledge, in consequence of which we are sadly deficient of data upon which to formulate a rational theory of disease. Medical works on this subject, so far as my experience goes, are unsatisfactory and of little service. Theories are concocted and lines drawn on paper to illustrate the various centers and tracts, which being different in different books are utterly confusing, and even though these lines may be correct representations, it is so difficult to understand the meaning of the author, that the reader commonly gives it up in disgust, blaming his own incapacity, and holding the author in high regard as a man of exalted intellect. His cases are dispatched to the specialist, sent to a sanitarium, or allowed to perish unobserved at his door, and science has lost its opportunity. By means of these casts, which can be made to represent any part of the nervous system, the study becomes at once easy, more easy than from the fresh brain, because they can be turned over, handled, and the relations of parts considered by the student, and can be referred to while reading. I have been asked where I obtained so much material. I will tell you; I seldom have trouble in obtaining permission to open the head, because I promise, and am careful never to leave any deformity of the corpse, or get a drop of blood on the carpet when performing a post-mortem examination. Many opportunities for making post-mortem examination are lost through want of attention on our part to neatness and cleanliness, and to carelessness about producing deformity of the head. Much information is lost in post-mortems by a want of orderly method in the procedure, and more opportunities are lost through the exercise of levity and an air of heartlessness often assumed by the operator and those present. In accordance with the feelings of friends, and assimilated to the environments of the death chamber, gravity and the expression of that earnestness which is appropriate to the countenance of an inquirer is in my opinion in better taste. I speak of this because I think that we should be careful to cultivate the sources of our knowledge by removing all obstructions in the way of opportunity. Students should be well instructed in the methods of making post-mortems, and be examined in this branch of the art as in any other.

The method in which I study the central nervous system, is to commence with the spinal cord, and to notice as far as I am able, the analogies as I pass upward into the brain, which is to be considered as a continuation of the cord inverted, and the fibrous and vascular matter rearranged and adapted to the alteration.

EVIDENCE OF THE SOMATIC ORIGIN OF INEBRIETY.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY EUGENE S. TALBOT, M.D.,

OF CHICAGO, ILL.

Dr. Langdon Down first called the attention of the profession to the fact that contracted arches and high vaults were common among idiots. Later on Dr. W. W. Ireland contributed largely toward our knowledge of and interest in these deformities. Both of these gentlemen have charge of large English institutions for the feeble-minded; both of them, but more especially Dr. Down, believed that these deformities were pathognomonic of idiocy. Dr. Ballard contended that inasmuch as these deformities were very common among idiots and, as is frequently observed, idiots suck their thumbs, therefore the high vaults and contracted arches were caused by thumb sucking. Later on we shall see that these signs are no more proof of idiocy *per se* than that Hutchinson's teeth are characteristic of inherited syphilis. Congenital syphilis is a constitutional disease interfering with the development and growth of the body, hence the arrest of development of the crowns of the teeth. Now, any of the constitutional diseases, such as measles, scarlet fever, typhoid fever, etc., which also interfere with nutrition, will produce the same deformities of the teeth. After Down, Ireland and Ballard had made known the results of their researches on this subject, Drs. Kingsley, Stellwagon and White, of this country, made extensive investigations in our own institutions of idiocy, and reported that contracted arches and high vaults were, in their opinion, no more common among idiots than among their private patients. I had frequently observed in my own practice quite marked cases of deformities of the jaws and irregularities of the teeth, hence you will observe my analogy to the Hutchinson teeth. That these deformities of the jaws and irregularities of the teeth were found to be nearly, if not quite, as frequent among apparently healthy individuals as among idiots, led me about twelve years ago to take up this particular line of study, with a view of ascertaining, if possible, the cause of these peculiar deformities.

I will not weary you with a recital of the different theories advanced as causes of these deformities, but as briefly as possible will give you the results of my own investigations. You are all aware that the main feature in idiocy is arrest of development of brain tissue; that the growth of the brain is greater between birth and the seventh year, than during any other period in life. After this period the substance of the brain and the different tissues of the body grow rapidly. If the brain be a healthy one, we would naturally expect to find all the tissues of the body developing in a normal, healthy manner. On the other hand, if the brain be diseased or arrested in its development, we would expect to find the tissues of the body arrested in their development. Reasoning from this standpoint, we observe that the different structures which go to make up the body of the idiot are very markedly deformed, and excessive development and arrest of development of tissue are frequently noticed. No other tissues of the body receive so marked an impression as the osseous system. Hence we observe excessive and arrested development of the jaws very frequently.

We noticed that the brain adds but little to its size after the seventh year; irregularities of the jaws and teeth are rarely if ever seen before that period. In other words, deformities are never observed with the first set of teeth. Now it is a singular fact that the first permanent molar makes its appearance at the sixth year. The superior maxilla and the bones of the cranium cease to develop in these cases at that period.

The second set of teeth requires a jaw one-third larger than does the first set, hence in those cases where the superior maxilla and bones of the cranium cease to develop at an early age, there is not sufficient room to accommodate them.

Contracted jaws and irregularities of the teeth always take place between the seventh and twelfth year, and if from any cause arrest of development due to defective brain should result, contracted jaws and irregularities of the teeth would take place at that period. The high vault is modern architecture; it is never seen in ancient skulls, and is more common in this country than in any other. It is always or nearly always noticed in defective individuals, neurotics, etc. Just how it is developed I am not prepared to state. The shape and character of the deformity depends entirely upon the order of the eruption of the teeth. Thus if a cuspid tooth is the last to erupt, the anterior part of the jaw becomes contracted, the incisors are thrown forward and the V-shaped arch is produced. If, on the other hand, the cuspid erupts before the bicuspid, the saddle-shaped arch will be formed. The cause of the deformity is a local one, depending upon a small jaw. There is, however, another cause for the small jaw, that must not be lost sight of, and which is not constitutional but local in its makeup, viz.: If the temporary molar decays early, or is extracted before the proper time, the first permanent molar will advance forward and fill the space made vacant by the removal of the first temporary molar. This condition must be taken into consideration in making up our diagnosis. I only give the cause in a general way for want of time, but each variety is explained in my work upon "Irregularities of the Teeth." Having thus found the cause, the question naturally arises: "Shall we not find as large a percentage of defective among inebriates as other neurotics?" I have therefore examined the mouths of all of these classes. I will now give you the results of my investigations, taking them in the order in which they were made.

TABLE OF DEFORMITIES OF THE JAWS OF THE DEGENERATES.

	No.	Normal.	Large Jaw.	High Vault.	V-Shaped Arch.	Partial V-Shaped Arch.	Semi V-Shaped Arch.	Saddle Arch.	Partial Saddle Arch.	Semi-Saddle Arch.
Idiots	1,977	55.3	7.6	16.	6.5	11.9	. . . .	10.4	. . . .	. . . .
Deaf and Dumb	1,935	45.3	15.7	21.7	8.7	9.9	. . . .	10.4	. . . .	. . . .
Blind	207	50.7	7.7	18.3	3.3	4.3	. . . .	5.3	. . . .	. . . .
Insane	700	62.0	18.	44.	26.	47.00	. . . .	12.	. . . .	. . . .
Criminal	477	36.06	15.72	14.67	2.70	16.56	3.9	12.36	19.28	5.03
*Inebriates	514	25.04	6.4	59.5	1.5	24.4	0.3	9.3	13.2	7.7
Normal	1,000	78.	1.9	5.6	1.1	6.1		3.3	. . . .	. . . .

* The examination of inebriates was made in the Keeley Institute, Dwight, Ill.; the Inebriates Home, Ft. Hamilton, N. Y.; Washingtonian Home, Chicago; Washingtonian Home, Boston; and Dr. Crothers' Institute, Hartford, Conn

It will be observed, that there is a larger percentage of deformities among the inebriates than among any other defective class.

These deformities, however, are not so *pronounced* as those found among the idiots and criminal classes. The large percentage of deformities and high vaults indicate a strong neurotic tendency early in life, even before the seventh year. Finally, if the child from the seventh to the twelfth year has arrested development of the superior maxilla, and possesses constitutional irregularities of the teeth and a high vault, we can almost invariably say that the individual will become, not always an idiot, but a genius in some one direction or an idiot, a deaf, dumb, blind, insane, criminal, an extreme egotist, excessive tobacco user, or an inebriate—all of these conditions coming under the head of degenerates, or neurotics. In making a diagnosis of any one of these classes of individuals mentioned, we should always take into account these three conditions of deformities of the jaws, viz.: arrest of development of the superior maxilla, constitutional irregularities of the teeth and high vaults.

Discussion.

Dr. J. G. Kiernan, Chicago, Ill.:—In a small proportion of inebriates the essential factor is a condition of degeneracy pointed out by Benjamin Rush several decades ago. It was undoubtedly true that a large number of the neuroses and psychoses occurring in these degenerate individuals had a tendency to assume a periodical type. The nerves themselves had periodicity of function. A distinction should be made between three classes. First, there is a vice class among inebriates; second, there is an inebriate class in whom the condition is the result of constitutional defect, but it does not assume a periodical type; third, there are many cases of this periodical type of degeneracy which are a manifestation of the periodical psychoses.

With regard to Dr. Dewey's paper, the fact was noticeable that the majority of cases had associated with them other factors in addition to the hereditary element and drink habit tending to produce insanity, as the morphine habit. The sudden stoppage of morphine in a neurotic individual might bring about insanity.

Dr. H. N. Moyer, of Chicago, considered Dr. Crothers' paper an exceedingly valuable contribution. It showed that inebriety obeys the law of many other nervous diseases. Most nervous diseases in a certain sense were periodical. A nerve never pains continually in neuralgia, and the pain is never equally severe at all times. There are periods of remission.

The matter of Dr. Talbot's paper should not be lost sight of, the somatic origin of inebriety as demonstrated in idiocy and other allied affections which Dr. Kiernan had classed among the degenerate types.

In regard to Dr. Dewey's paper, he thought the author had dealt too leniently with Dr. Keeley. He believed the only gold in the Keeley treatment came from the pockets of credulous patients. An analysis of the remedy as sent out for home treatment had been made in Philadelphia by an able chemist, and nothing of importance was found in the "shot," as it is called. It contains no chloride of gold and sodium, and no strychnia, simply an organic compound, of no marked physiological activity. The "dope" was a mixture of tincture of cinchona and tincture of gentian. It had been his misfortune to have sent four patients to Dwight, and these four had relapsed. The speaker believed the only effect of the Keeley treatment was purely one of hypnotism, to use a term that was much abused. The hypnotism, however, was not applied as physicians commonly use it in producing hypnotic sleep, such as fixing the attention on a distant point, or other means of sensory perception. The hypnotism and suggestion was bound up with the hypodermic syringe, which was used several times a day, and in the association of large numbers for treatment, and the persistence with which they were told that they were cured.

The paper was further discussed by Drs. McClelland and Green, of Michigan, Dewey, Talbot and Crothers.

THE LAW OF PERIODICITY IN INEBRIETY.

Read before the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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The alternation and periodicity of the functions of the brain and nervous system have not been fully studied. Periods of inactivity as in sleep and wakefulness for a definite time, the rise and fall of temperature, increase in heart pulsation and cardiac pressure, the nutrient and reproductive periods, are all common physiological periodicities. This same mysterious alternation appears in the diseases and degenerations of the brain and nervous system.

The neuralgias, migraines and epilepsies are familiar illustrations. In insanity the folie circulaire is equally noticeable.

This rise and fall of nerve functions, together with halts, alternations and relapses in disease, suggest a field of laws and forces that are largely unknown.

The inebriate who drinks to great excess at distinct intervals and abstains totally during the intervening time, is a type of the neurotic character of these strange cycle degenerations.

Literally, and in appearance these cases represent in one person, a type of exemplary living, and a state of alcoholic frenzy, with mental and moral degeneration—recurring within fixed intervals of time.

At one period the victim is a rigid moralist and strict abstainer and by word and example is often a temperance lecturer of an aggressive type whose views are emphatic and earnest. Later, he is secretly and openly an excessive drinker and a low intriguer—displaying the most opposite traits of character and conduct.

Yet the public accept his theories of inebriety and its remedies, and assume his experience as knowledge not possible to others.

Unlike any other victim of disease, his judgment is held in higher esteem, and his views are considered as authority on this topic.

Some general statistics indicate that over 60 per cent. of all inebriates are of this periodic character.

The length of the free interval varies widely from one week to two or more years, and in some cases recurs at distinct intervals not varying more than a few hours.

In others this free interval is very irregular— apparently depending on unknown conditions of environment. In others it follows certain functional derangements and disturbances of nerve and brain health.

In certain cases it appears as mysteriously as a flash of electricity in a cloudless sky, with no premonition or hint, and each attack comes on in an equally mysterious way.

The clinical history of these cases reveal several distinct classes, with widely varying symptoms and conditions.

One of the most prominent groups I have met are the insane impulsive periodics. The free interval varies widely. The drink craze comes on abruptly when least expected. Thus, at some unexpected moment when his presence and judgment are most essential to success, and when the drink craze may be almost fatal, he will fall.

As an illustration, on the eve of marriage, or some social, political, or literary triumph, or business success, this delirium appears.

He will disappear and conceal his condition, or boldly display his insanity in opposition to all advice or entreaty. Then suddenly realize his condition and make a great effort to recover.

Intense sorrow and grief, coupled with explanations, prevarications and earnest efforts to repair the losses will follow.

Often he will ascribe his recovery to some means or remedy taken at the last moment and defend it with delirious faith and energy.

He is often unable to give any rational idea of the motive or reasoning which preceded the drink craze.

His memory is always vague as to the nature of his acts, and although events may be clear, the higher consciousness is cloudy.

The reason and judgment seem to be suddenly arrested by some morbid impulse which palsies every other consideration.

These paroxysms come without any apparent premonition, and are a surprise to the victim and his friends.

The drink thirst continues up to a certain point and then dies out suddenly.

The character of the acts in this delirium vary from maudlin religiosity to wild aggressiveness—and through all degrees and forms of insane acts.

Men in this state will display delirious zeal for the temperance cause and be very prominent in revival religious and charity meetings during the free interval and continue it during the onset and decline of the paroxysm.

The height of the attack is marked by coma, or extreme delirium, with delusions, hallucinations and hyperæsthesia running into intense egotism, ending in a period of bold hypocracy and self deception. This in turn gives way to the normal, mental and moral status which continues to the next period.

Another class of these periodics will display distinct premonitary symptoms of the drink storm and like the first class will be clearly unconscious of it.

The more common of these symptoms are degrees of unusual excitement or depression, great business energy or apathy,or especially brilliant mentality or the opposite.

Often they exhibit alarm for their future state, fear of poverty or dread of sudden death. Then suddenly the drink delirium appears, and an entire change follows. When this subsides the old delusions are not taken up. Deep depression generally ensues with a partial or total blank of memory or a delusion of some particular pleasing or unpleasing event in the paroxysm. Not unfrequently marked hallucinations and vague delusions continue for a long time.

The drink insanity is sometimes filled with short periods of pretended effort to abstain, or of intrigue and low cunning to defeat the efforts of others to help them. Such men appear at the prayer and temperance meeting, appeal to the benevolent, pass as examples of cure by some strange mental or moral remedies. Egotism seems to be a dominant mental symptom, together with duplicity and prevarication. When the paroxysm dies out all this false character disappears.

A third class after a period of prolonged sobriety will have premonitory periods of delusive reasoning, usually that they have some disease which requires spirits as a remedy. They appear in good health and seem oblivious to any past experience in which the same idea preceded former paroxysms. After a drink of spirits as a medicine, the drink storm comes on. When this is over they do not stop abruptly, but continue in decreasing doses until final subsidence.

Then comes a period of food and health delusions, marked by unusual care of themselves, their surroundings and nutrition. Such cases are not unfrequently checked in the midst of a drink paroxysm, by some powerful mental emotion as an appeal to their fears, forced changes in their surroundings, or abrupt shocks to their ambitions or purposes in life.

Often the paroxysm is marked by some condition which breaks out again when these restraining states are removed. The value of chemical restraint is by covering up the impulse and thus holding it a long time in abeyance, but only as a rule to break out again. This class is prominent for the mental symptoms of paranoics, and are rarely seen occupying positions of trust and responsibility long. They develop general paralysis and melancholia, and often die of suicide.

A fourth class is noted by the exact recurrence of the drink cycles, irrespective of all conditions and surroundings of life. The paroxysm is sudden and impetuous and the mind is filled with delirious conceptions of pleasure from the tastes and effects of alcohol.

This state may be concealed for a time, but grows steadily until full gratification follows. Such cases suddenly assume some burden of reform, with a secret hope to break up their imperative conceptions. The most careful plans for the concealment of the drink storm, are often made which end abruptly with no especial depression or moral regret. The memory of acts committed during the storm is cloudy, and the free interval never varies in time and hence a certain expectation is created in the mind which prepares for it.

Many of these cases are engaged in the work of helping others and exhibit obscure acts which are only explained by the presence of this fated periodicity. These cases never can give any rational reason or explanation of their conduct and as a rule always try to conceal it.

The heredity of these cases is prominent. So far over 90 per cent. of all cases of periodicity have a neurotic heredity.

Insanity, epilepsy, inebriety, hysteria, idiocy, dementia, paranoia, also phthisis, rheumatism and the various organic heart diseases are present in the parents and grandparents, indicating an irresistible neurotic degeneration coming from the ancestors. All these neuroses are interchangeable and may break out in periodic inebriety from special but unknown pre-disposing causes. The recurrence of the drink paroxysm is of itself evidence of a neurotic origin involving the higher controlling centers.

It is a question of great interest to determine how far this neurotic tendency to break out at distinct intervals in morbid impulses for the narcotism of alcohol, is a direct inheritance or whether it be one of the symptoms of obscure disease. Children of inebriate parents often have distinct hereditary predisposition to use alcohol.

Coming from neurotic patients the marked tendency is to arrested growth and development before birth, enfeebled power of adapting themselves to environment for the first few years of life, irregular development and precocious growths in certain cases at puberty.

The degenerations from functional organic diseases which the system is unable to overcome, the morbid tendency to exhaustion of the higher nerve centers and the faulty maturity of both organic and functional activities. Add to these the common errors of environment and nutrition and the hereditary taint or tendency to develop certain distinct nerve diseases is inevitable. It is often developed disease with a neurotic basis or favoring tendency.

The drink craze as at present understood is a symptom of central nerve and cell debility demanding relief from the narcotic action of alcohol.

Why these states of brain anæmia or irritation of function should gather and explode at periodical intervals is not clear. The same states of degeneration both acquired and inherited appear in epilepsy and other neuroses, showing that they are clearly allied family diseases only varying in symptoms.

As in epilepsy, the periodic inebriate suffers from disturbance of the coördinating and inhibitory apparatus of the higher brain centers.

Nerve energy is not liberated along motor tracts, but through mental areas in the impulse for rest from the paralysis of alcohol. The discharging energy is neutralized by chemical restraint. The physical and psychical energies of the brain centers are overcome by continuous narcotism, for the time. Then a period of normal activity follows in which this explosive impulse is dominant.

These paroxysms resemble epilepsy in origin, onset, duration and termination. They differ in being confined to consciousness and mentality with a central object for relief.

After the explosion the mental operations seem normal, and along the levels of comparative health. Opium and other narcotics will bring the same relief at these times, but probably they are followed by more organic disturbance which demands their continuous use.

The increase and diminution of alcohol from brain circulation and the vaso-motor paralysis together with reduced temperature, non-elimination of organic products and slowing up of both functional and organic activities, to the verge of total suspension, followed by a rapid return to apparent normal states, is peculiar to these cases. In all probability the periodic inebriate, in many cases, is largely a masked form of epilepsy, and is the result of special unknown exciting causes and conditions.

The steady drinker will after a time, have alcoholic epilepsy from continual irritation of the cortex; or may become a periodic inebriate—*manifesting* at times a delirious craze for alcohol, and then having a free interval of sobriety. The same causation seems to be prominent in both.

The same profound cerebral anæmia or irritation that breaks up coördination and perverts nerve energy, may develop into a convulsive discharge through the motor tracts, or a convulsive impulse for spirits and relief.

The natural function of the brain, to gather and discharge energy, is impaired and the force essential to the normal working of the organic life explodes at intervals with destructive energy.

These periodicities are more common after twenty when the organic activities of the brain have become matured, and often subside or merge into some serious nerve or brain degeneration before fifty.

In many cases they appear to follow a natural cycle, beginning in a short period of continuous drinking, then a drink paroxysm with long free intervals.

The length of the paroxysm increases up to a certain point—then grows shorter commencing in a single day or night's indulgence—it grows until it covers two or three weeks of time, then becomes less and less until finally a day or a few hours is the utmost limit of toleration.

The system then refuses to retain any more spirits, and an intense loathing and repugnance follows.

The free intervals likewise change, at first extending over months, and often one or two years—they grow gradually shorter—until they reach a minimum of a day. Then increase until the drink craze finally dies out, or death follows.

This rise and decline in length of the drink and free interval period, points to some unknown law of accumulating nerve force and degeneration. The fundamental principle running through these periodicities is the steady uniform march of degeneration, manifest in *explosions of nerve energy* for narcotism and relief.

The force generated in the nerve centers concentrates, and reaches a degree of tension that is only discharged in the acute delirium and coma of alcoholism. Narcotism from opium, cocaine, chloral and similar drugs have the same effect, with greater prostration and nerve lesions, which demand its constant repetition. The narcotism of opium, chloral and other drugs is never followed by repugnance and a free interval of relief and rest.

Hence, the treatment of these drink paroxysms by the substitution of other drugs is always dangerous.

It is a question of grave importance how far such cases are to be considered of sound mind and capacity.

Is it possible for any one to be narcotized for a week or more at different intervals and yet retain normal reason?

Does the brain fully recover from these explosions and the chemical and physiological effects of alcohol, when used to excess, even though followed by a free interval?

The popular opinion, even among physicians is, that such symptoms are often signs of genius and eccentricity, and are rarely to be considered as evidence of disease.

Clinical study brings no support to such views, but on the contrary, points out grave changes of the higher brain centers seen in failure to both reason *and control the higher brain activities.*

While the higher and psychic brain steadily degenerates, the lower motor and automatic brain goes on masking and concealing the evidence of disease.

Along the normal lines of every day's thought and work, the apparent health of the victim may be unquestioned, but vary this and his real condition becomes apparent.

Let the periodic inebriate change his occupation and surroundings and this incapacity and unsoundness will be prominent. Practically the periodicity of the drink craze, together with its intense unreasoning demand for narcotism is an unmistakable sign of disease. *Literally* both this morbid impulse and the effects of the gratification break up the coördination and the inhibition of the higher brain centers, impairing the capacity for healthy brain reasoning, and leaving states of debility and unsoundness. The failure to realize this fact is followed by very serious losses, accidents and tragedies every day.

The periodical inebriate should of all others, receive immediate medical care. There is impending peril and danger in his case far more than in the regular drinker. His case should be studied and the various pre-disposing and exciting causes *removed,* and the real disease discovered, of which the drink craze is only a symptom.

While the periodical inebriate may live many years and attract no attention medically he is always the center of possible grave disorders, epilepsies and paralyses. His conduct is a succession of disappointments, of failure and losses, that are viewed from the moral side. Overweening confidence and boasts of strength and abject failures are constantly repeated. Many of these cases become paranoics and dangerous to society. The very complexity of the causes and symptoms, make them fit subjects for mental delusions and epidemics and enthusiastic supporters of all changes and events involved in mystery.

The mystery of these drink cycles in themselves prepares the mind for credulous, unreasoning superstition and conduct. The number of periodic inebriates, in all conditions of life, is very large and while they do not attract much attention, are unquestionably the most dangerous brain and nerve defectives in the community. They are amenable to treatment and are both curable and preventable. The periodic inebriate, like the epileptic, has been mustered into an organized cycle of degeneration and death and there is no escape except by applied forces of science.

This is the new psychological territory opened for settlers with its boundless wealth of facts and laws pointing to causes and conditions that are preventable, awaiting discovery and application, promising a new era in medical science. As a summary of this brief study:

1. The periodicity of the drink paroxysm is unquestioned evidence pointing to central brain lesion.
2. Heredity, nutrition, mental exhaustion and environment are all very common causes, or pre-disposing factors, of this condition.
3. Allied diseases, of which epilepsy is very common, are associated with this, and similar affections are interchangeable.
4. The drink periodicity follows a uniform line of events ending about the same way in nearly all cases. Its varieties and symptomatology are practically the same in the regularity of origin, development and termination.
5. These cases are the most certain and dangerous of all drink neurotics and are the least understood. The prognosis is uncertain and full of dangerous possibilities and the natural tendency is death.
6. These cases are very susceptable to treatment when the measures are applied scientifically and with full knowledge of the causes. Their inebriety is more positive than that of other inebriates. The drink impulse is often controllable and frequently disappears with treatment. This class requires the most careful medication and study.
7. Medico-legally the most important problems are associated with these drink paroxysms. Each case requires special study and is to be judged from general principles of physiology and psychology.
8. Such cases of necessity have impaired nerve control and cannot be measured by the rules or standards of mental health.
9. All these cases should receive careful study and examination. Tabulated facts of sufficient number and accuracy are needed from which to draw accurate conclusions covering the laws which govern this class of neurotics. Their curability is assured when the causes are known and by the application of means known to science.

"DELUSIONS AS TO LOCALITY" A PROMINENT SYMPTOM IN THE MENTAL DERANGEMENT OF CHRONIC ALCOHOLISM, WITH A TENDENCY TO DEMENTIA.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY L. D. MASON, M.D.,
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After an attack of acute alcoholic delirium either of the febrile or nonfebrile type not unfrequently instead of a reasonably rapid convalescence the patient passes into a mental condition that becomes more or less chronic—as there may be a history of one or more preceding attacks of delirium tremens, and more especially the nature of the treatment to which the patient has been subjected, for I firmly believe that the administration of large and frequent doses of the various depressing drugs, as chloral hydrate, the bromides or other cerebral sedatives, while they may promptly relieve the more acute and urgent symptoms by producing a more or less profound cerebral anæmia, will also tend to protract the recovery of the patient towards his normal mental condition, if not precipitate him into a complete or partial dementia. But from whatever cause it may arise, we find mental weakness in some degree, the condition of the average inebriate as he comes out from under his attack of acute delirium.

In the partial form of dementia he can dress and feed himself, but he is listless—indifferent, not prone to exercise—under reasonable control, but full of delusions, dependent upon the amnesia which accompanies his demented condition, so that the memory is obscured as to present events, and operates and acts largely in the past, so that persons long since dead are supposed to be living—acts and circumstances of the past become those of to-day. There is a marked similarity between this form of dementia and senile dementia—they have many points in common—in both the memory is weakened or absolutely deficient as to present events, and events intermediate, between the past and the present, so that the mind operates largely in the past. Lives in the past and past events are transferred to to-day, or as it is said, "Lives are lived over again." Now prominent among other delusions, we find in the form of dementia under consideration what we may designate as a "delusion as to locality," by which we mean to imply, that the subject of it imagines that at stated intervals he visits certain places, sees, converses with, and transacts business with certain people—and those persons, places, and forms of business are those to which he was accustomed in the past; and while it is true that the condition that thus calls back the past, and causes the subject of it to be surrounded with, and live as it were, in the past, is the product of a diseased mind, it is equally true that the persons, places and events so recalled, are not the vagaries of a disturbed mental condition, but the persons and places did actually exist, and the circumstances did actually occur, but they are in relation to the patient matters of the past; for weeks, months or years it may be, he has not been brought in contact with any of these persons, places or circumstances.

He has not for several weeks or longer, left his room, or the limits of the institution in which he is confined, and yet he believes that he daily visits his business haunts, sees old friends, and transacts the daily routine of business; by some leading or suggestive questions as, "Have you been in town to-day?" "Whom did you see?" "What business did you transact?" A reply in the affirmative is inevitably the case, and sometimes the patient will give in detail, the particulars of his imaginary visit.

Now it may be inferred that the weakened mind takes readily to a leading or suggestive idea put as a question, and accepts it as a reality. But I do not believe such to be the case, for the patient will adhere to his delusion without much, if any variance, at subsequent periods, all through the period of his demented condition, the delusion fading away gradually, disappearing as his normal mental condition asserts itself. Like many similar delusions in the mental history of the insane, while it is the first to come, it is the last to leave.

This peculiar and prominent delusion of partial alcoholic dementia we designate as a "Delusion as to locality," as probably best expressing the condition involved.

Authorities do not give this peculiar delusion as occurring among the many that affect the insane, if we except the condition known as senile dementia.

Blanford reports a case "In which the insanity was the result of drink," and had terminated in dementia in which the person believed that he drew checks and got his servant to cash them, whereas he did not do anything of the kind, his affairs being entirely in the hands of a trustee; he simply imagined he did that which he was accustomed to do in the past.

I do not feel competent to exclude the whole field of mental derangement, other than alcoholic, and assert that this peculiar delusion is limited to the latter class of cases, and therefore, it would be of interest to secure the experience of the Section on this point.

A typical case, one of several that have come under my observation, was that of a master of a vessel, who was confined in the Inebriates' Home at Fort Hamilton, and under my care and observation for at least three months.

He was about 55 years of age. had been a sea-faring man all his life, he had no history of head injury or syphilis; he had sustained a fracture of the ribs and general contusions in an accident at sea.

He had drank more or less freely for many years. He was brought to the institution by his wife, because of his mental condition. He was able to dress and feed himself, but his mental powers had progressively weakened for some time. He sat in his room in the institution, was listless, non-communicative; except when questioned, spoke but little.

He believed that every day or on stated days, he visited New York City, where his ship was laid up, saw the ship owners, went aboard, attended to the lading of the vessels, and got her ready for sea; in other words, performed the usual duties of the captain of such a vessel when in port. One afternoon he told me he had been on a cruise to New Orleans, and had just returned. This delusion, that he performed the duties pertaining to an officer of ship, daily or occasionally, adhered to him during his residence in the institution. When he left the institution the delusion still continued, and the partial dementia still existed. His wife said he was very much like a child, he could be coaxed, and as a rule, was fairly well controlled. She gave him ale or beer occasionally. He lived for several years after he left the institution, and died in April, 1891, from an acute attack of bronchitis. His wife has since stated that the delusions did not trouble him during the latter years of his life; that there was not any progressive weakening of his senses; no partial paralysis; that his speech remained good, and that he was useful about the house, and quite helpful up to the day of his death. Several years covered the period from the first appearance of his dementia until the date of his death. In other cases the delusion will take form according to the previous occupation, and antecedents of the patient.

The physician will attend to an imaginary practice, the farmer cultivate an imaginary farm, and the merchant transact an imaginary business, etc.

It is of importance to call the attention of the Section to the fact that this "peculiar delusion" is usually elicited or called out by a direct question from the physician, and may escape notice, if an effort is not made to bring it into prominence by proper interrogation. It would be satisfactory also to ascertain to what extent the members of the Section have observed this peculiar delusion, in the various forms of mental derangement, exclusive of senile dementia, and alcoholic dementia.

Also in what proportion of cases of alcoholic dementia they may have observed it. If it is peculiar to the latter form of dementia, it will be of value in the differential diagnosis, between alcoholic and other forms of dementia.

NOTE ON THE RELATION OF THE SYMPATHETIC TO THE CEREBRO-SPINAL NERVOUS SYSTEM.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY HAROLD N. MOYER, M.D.,
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Stewart[1] in opening his article on the disorders of the sympathetic nervous system, says: "Although the physiology of the sympathetic has been advanced considerably within recent years, there has not been a commensurate advance in our knowledge of its diseases. In fact, with the exception of a few important disturbances which we know to have a direct causal connection with alterations in the sympathetic, our knowledge of its diseases is very superficial and in many cases purely problematical." He then gives the following list of the chief disorders attributed to changes in the sympathetic, hemicrania, exophthalmic goitre, angina pectoris. Addison's disease, diabetes mellitus, unilateral hyperidrosis, glaucoma, neuro-retinitis, and ophthalmia neuro-paralytica. He does not mention neuralgia, neuritis or any of the common disorders to which nerves are liable, and yet neuralgia of the abdominal sympathetic is a comparatively frequent affection. Indeed, most modern writers have neglected this disease, seeming to regard it as synonymous with colic. It is this habit of applying the general term colic to all painful disorders having their origin in the intestine that has done so much to obscure our conception of the diseases of the abdominal sympathetic. Thus, Ross[2] in speaking of the cœlic plexus, describes neuralgia mesenterica, and as synonyms employs the terms colic, enteralgia, and colica saturnina. That he regards these conditions as practically identical is apparent from the description, where he says that "enteralgia or intestinal colic consists of pains in the abdomen, having their seat of maximum intensity about the umbilical region." He mentions neuralgia of the gastric and hepatic plexuses, but it is only when describing the disorders of the cœlic plexus, that he seems to regard pain in this region as identical with colic. Romberg[3] clearly pointed out the error of applying the term colic to every pain having its origin in the intestinal tube.

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[1] Reference Hand-book of the Medical Sciences, VI. 692.
[2] Ross, Diseases of the Nervous System.
[3] Romberg, Diseases of the Nervous System.

In this he was not alone, as Thomas Willis[4] had described essential neuralgia of these parts long before and had clearly distinguished between the colicky pains vulgarly termed the gripes and the disease in question. The former attacks all classes of people indifferently, is caused by incongruous or unusual beverages, diet, taking cold, etc. The latter, however, develops in persons who are predisposed, it has peculiar features, and is probably dependent upon an essential cause differing from the accidental ones named as originating the first group.

The severest case of abdominal neuralgia that ever came under my observation, was that of a young man 26 years of age, single, of good habits, who was employed as a salesman in a feed store, and led a temperate, active life, with plenty out of door exercise. He was apparently in perfect health, his complexion was ruddy, appetite good, and bowels regular. For the past seven years he had suffered from excruciating pains in the abdomen; the attacks would come on at intervals of from one to three weeks, and would last from 24 to 72 hours. The pain would begin as a dull ache, having its point of maximum intensity, about the umbilicus, it would gradually increase in severity until it was quite unendurable. In the attacks when I saw the patient, the abdomen was usually retracted, the pulse was small, and the pupils moderately dilated. The face was often covered with perspiration. The pain would increase for some time, reaching the maximum at the end of twenty-four or thirty-six hours, it would then gradually subside until it had entirely disappeared, and the patient was again in apparently perfect health. While the patient has suffered for seven years, it is only during the last three, that the disease has acquired its present severity. At no time during the attacks was there any tenderness upon pressure, nor did pressure afford any relief to the pain. There was no rise of temperature during the attacks, though it was frequently taken. While the pain always began about the umbilicus, after some hours it would radiate to all parts of the abdomen, and would apparently pass a short distance above the margin of the ribs; it extended into the loins when the attack was at its worst.

During the time this man was under treatment, which extended over some months, every possible source of reflex irritation was looked for. The stools, urine, bladder and rectum were carefully and repeatedly examined, but were invariably found to be normal. During the paroxysms of pain the stools were always regular, and the fæces well formed. An important fact in this patient's history was that at no time did he present any of the usual symptoms of neurasthenia. He had used morphine for some years to control the pain but had not become an habitual user of the drug. He was rigorously treated in a variety of ways. The constant current was used with at first quite marked effects, but it soon ceased to exercise any control over the disorder. Various antineuralgics were employed, but like morphine, they seemed to exercise only a temporary influence. The patient realizing that I could do little for him finally drifted away; the last I heard from him was that he was having his attacks with their old time regularity, and he had settled down to the belief that with him they were a fixed and irremediable condition.

My reasons for regarding the above case as one of pure neuralgia of the abdominal sympathetic is that it closely resembles neuralgias of the cerebro-spinal nerves in its paroxysmal character, the freedom from all associated structural changes in the organs supplied by these nerves, the unaltered secretions and absence of all signs of inflammation. Of course the absence of tender points and the tendency of the pain to radiate to different nerves and plexuses until apparently all within the abdomen were involved, could be affirmed *a priori* when we consider that this portion of the nervous system is made up largely of non-medullated nerve fibres and closely associated ganglia.

Another case was one in which the cardiac and pulmonary plexuses were involved. A man 38 years of age was sent to me from an adjoining State, with the following history. Three years before he began to experience pains in the chest radiating from the sternum in all directions, but especially over the precordia. There was a good family history and an account of previous good health. The onset of the pains were gradual, but they increased in severity until now they are at times very severe. He says that he is never free from some uneasy feelings in the chest. The man is in excellent health, has never a cough or any severe illness. His digestion and appetite are good and he sleeps well when not disturbed by the pain. He admits having used tobacco excessively for many years, but for the last twelve months has stopped it entirely. An examination of the heart shows arythmia but no enlargement or murmur.

I have detailed the above histories for the purpose of showing that so far as one common form of nerve disturbance is concerned the sympathetic nerves do not behave differently from those of the cerebro-spinal system.

Most writers seem to regard the sympathetic as having peculiar and distinguishing functions apart from those possessed by other portions of the nervous system. Doubtless much of the obscure theorizing regarding the pathology of the sympathetic has its origin in the vague and fanciful notions held for so many years by the older physiologists.

Bucke, of London, Canada, claimed that the moral nature of man resided in this part of the nervous system, and in one case of insanity associated with marked moral perversion he searched these ganglia closely for anatomical changes.

Even yet it is the custom of our standard works to look upon the nervous system as composed of two divisions, the cerebro-spinal and sympathetic, but Dr. Gaskell pointed out the erroneous nature of such an assumption, and showed that the so-called sympathetic system was but an expansion of the cerebro-spinal nerves. The chief reason relied upon by the older anatomists for making this distinction was morphological; the presence of numerous ganglia and the fact that the greater bulk of the fibres were non-medullated, or the so-called grey fibres. Later research has abundantly shown that these structural differences are more quantitative than qualitative. Non-medullated fibres are found in the spinal nerves in considerable numbers; these nerves are also associated with nerve cells irregularly aggregated but in small numbers, usually at the point where they break up to form plexuses before passing to final distribution. Bearing in mind, therefore, that these structural differences are of degree and not of kind, we are better prepared to regard the nervous system as an entity and we shall reach a much better understanding of its different parts. What structural differences there are is due to the fact that it is through the cerebro-spinal nerves that the principal sensations from the skin and voluntary impulses to the muscles pass. Of necessity these fibres must be insulated; they must have a medullary sheath. If such were not the case there would be an interference with sensations and we would not be able to locate the point of impingement upon the surface. Again, the voluntary movement of a single muscle presupposes that the impulse which gives it origin shall start from the cortical centre and travel upon a medullated, *i.e.*, insulated fibre to its termination in the particular muscle. The older and indeed current writers on this subject said it was the peculiar function of the cerebro-spinal nerves to preside over the voluntary functions, in contra-distinction to those of the sympathetic whose function it was to govern the involuntary or vegetative functions. If we could strip the cerebro-spinal nerves of every sensory and motor medullated nerve fibre we should find almost the exact counterpart of the sympathetic system. A careful examination of the anatomical structure of the sympathetic shows that these conclusions are correct, as no fibres are found to have their origin in the ganglia but all are derived from the cord. For the most part they have their origin in the inner side of the posterior horns and they are at first medullated, but as soon as they reach the ganglia they loose their insulating sheath, that is, the greater part of them do, and pass on to their distribution. A relatively small number of medullated fibres persist in the sympathetic just as a relatively small number of non-medullated fibres are found in the cerebro-spinal nerves. The error of the older writers was in regarding the cerebro-spinal nerves as being distinctively motor and sensory, overlooking the fact that they possessed to a marked degree the vegetative or trophic functions. We venture the prediction that only for this unfortunate misconception of the functions of these two great divisions of the nervous system we would have a much clearer knowledge of many pathological processes than we now possess.

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[4] Opera Omnia. (Ibid)

We may divide the development of this subject into three stages. In the first physiologists divided the nervous system into two parts, the voluntary and the vegetative. This relegated the sympathetic, to a position not much more important than held by ordinary connective tissue. The second stage was ushered in with the discovery of the vaso-motor nerves and the fact that most of the cerebral ganglia were connected by filaments with the sympathetic and that many of these exercised a direct influence on the calibre of the blood vessels to which they were distributed. With this epoch came much of the bizarre pathology that linked many strange disorders, such for example, as hemi-facial atrophy to changes in the sympathetic. It was such an easy matter to sever the cervical sympathetic and note the dilated capillaries, therefore the atrophy of the same region must be due to changes in the circulation. As a matter of fact this disorder is much better explained by referring it to trophic disturbances in the fifth nerve. These and other erroneous conceptions were accentuated by the fact the sympathetic is concerned in regulating the blood supply of the great organs; their relative importance in this respect has obscured the fact that the spinal nerves have the same function. In fact there is not a single difference in the function of these two systems, so-called, that is not readily explainable by these structural peculiarities and by differences in the office of the organs to which they are distributed. There is not a single basic function of nervous tissue which they do not possess in common.

The third stage will, we hope, be one in which the nervous structures are described, not as being divided into two systems, but one in which the sympathetic nerves are regarded as branches of the cerebro-spinal, subject to the same laws of functional activity and liable to same accidents and diseases. With this more correct understanding of its relations, we look for increased interest in its structure and functions and a better clinical grasp of its disorders.

SURGICAL INTERFERENCE IN CEREBRAL DISEASES OF CHILDHOOD.

Read by Title in the Sectio [illegible] urisprudence, at the Forty-third Annual [illegible] lical Association, hel [illegible]

BY FRANK PARSONS NORBURY, M.D.,

OF JACKSONVILLE, ILL.

It is the object of this paper to consider the advances made in the pathology and surgical treatment of the cerebral diseases of childhood. It is not deemed necessary to recite the history of this progress, nor to enter largely into the discussion of the theories upon which much of the modern surgical interference is founded. There can be no question as to the advisability of interference by surgical means when the known pathological conditions are such as to warrant the hope for improvement. But gross theoretical speculations as to the pathology, such as have been advanced relative to microcephalus, are not scientific and are not sufficient to admit of operative procedure. Starr has rightly said, that the solution of the problem of operative treatment, in cerebral diseases of childhood, must be based upon two conditions: First, the pathology of the cases; and secondly, upon the results of experience when such operations have been done.

Microcephalus.—The pathology of affections peculiar to childhood has not received the study it deserves by operators, and others advocating surgical interference. Especially does this apply to microcephalus, the relief of which, by linear craniotomy, has been so strenuously advocated, by surgeons on both sides of the Atlantic. While Lannelongue has modified the original theory, that advocated by Virchow, viz.: that microcephalus was due to premature synostosis, by saying that the condition is due to maldevelopment of the brain, and the changes in the cranium are secondary, yet he persists in doing the operation, hoping thereby to stimulate brain growth. Microcephalus is a true pathological condition having intra-uterine arrestment of brain development as a cause. Whether disease of the fœtus, or nutritive changes from other causes, are primary in producing this result, we are unable to say. There is deficiency of structure, as well as malformation, of the brain, and synostosis is not a factor in producing this narrowing of the brain in all its diameters.

Concomitant as it is in almost all cases, yet microcephalus may exist without it. Down, of London, reports cases of microcephalus where the sutures were not closed, even the medio-frontal suture, which is ossified during the first year of life, was open. He says: In my own observation of the crania of two hundred idiots, the arrest of development was not the result of premature ossification of the sutures. He further says, in speaking of one particular case: "I am desirous of placing on record this extreme degree of microcephalus, without any synostosis, as a striking example in which other than mere mechanical causes must be looked for as productive of this and analogous cases."

Shuttleworth, after reporting a similar case, says: "I am inclined to think that the premature synostosis is, as a rule, the consequence rather than the cause of imperfect brain development, and that the arrest of growth is about the sixth month of gestation."

Fletcher Beach supports this view, as also does Ireland, who says in many microcephalic heads the fontanelles are open and the sutures not united.

To Wilmarth we are indebted for much of the advancement made in the pathology of idiocy; he in his extensive autopsies has found but one case where any brain compression existed, while in most cases the convolutions were full and rounded. In a private letter to me he says, "There is very little evidence that microcephalic brains result from compression of the skull, but on the contrary there seems to be in nearly all cases an extra amount of subarachnoid fluid, with no flattening of the convolutions, or other indications of intra-cranial pressure, as if the skull had grown slightly beyond the brain. If the conditions arose from cranial pressure, all parts of the brain should suffer alike, as the brain may be regarded as fluid, so far as transmission of pressure is concerned. I agree with you that the defective growth is more often due to nutritive faults, which we do not at present understand."

My own studies based upon anatomy, embryology, pathology and clinical observation, have convinced me that in microcephalus we have to deal with conditions not amenable by surgical means. Anatomically speaking we recognize that intellectual development depends, as Meynert says, on the uniform structure of all parts of the brain. In microcephalus, we find absence of cortical structure, necessary to normal mental development, and that the degree of idiocy is not dependent so much upon the degree of microcephalus, as upon the amount of structural deficiency. The smallness of the skull is no criterion of intelligence, in these defectives. The structural deficiency is shown in effacement and interruption of convolutions; the simple and defective arrangement of fissures; the absence of the central portions of the brain, and atrophy of the lobes, especially the frontal and occipital. Microscopical examination shows diminution in number and absence of ganglionic cells in certain layers, and deficiency of nerve fibres.

Embryology teaches us that the brain is developed early, but that it is not until near the fourth month, the most important portions are shown; then it is the frontal, occipital, parietal and temporal lobes can be distinguished, and the primary fissures are pronounced. The secondary fissures appear between the fifth and sixth months; the occipital lobe should cover the cerebellum at the sixth month, according to Beaunis and Bouchard. In the seventh month nearly all of the main foldings of the hemisphere come into view, the frontal lobe elongates, the Sylvian fissure narrows to a cleft. In view of these established facts we conclude from observations of the brains of microcephalics, which in so many cases show evidences of arrestment before the evolutionary processes above stated are completed, that arrest of development occurs at or near the sixth month of gestation. An embryological study of the process of ossification does not sustain the theory that synostosis is the cause of microcephalus.

Embryology shows that the vault of the skull is formed in membrane and the base in cartilage, and pathology often makes the distinction more manifest (McClellan), which it does in microcephalus. The ossification in the base is well advanced at birth, and the vertex may or may not be completely ossified, according to the precocity of the osseous system, "existing without any correlation between the growth of the brain and skull." Wilmarth says, "I am convinced that in the majority of cases the skull does not grow simply because the brain does not." My own observation is that skull growth is dependent upon brain growth only to the extent of localized nutritive interference on the part of the brain reflected upon the skull, as in flattening following sclerosis. General lack of skull growth depends on general nutritive interference, which, while it may affect both brain and skull, does not necessarily do so, as evidenced in synostosis, and also in open fontanelles in microcephalus. We conclude, that synostosis is the result of arrested brain development, without interference with the process of ossification. The results of experience when the operation of linear craniotomy has been performed do not sustain the claims made for it by Lannelongue and his followers. Statistics of operations performed, which I have been able to gather, show such meagre results and such great mortality, both in this country and Europe, that it seems to me folly to continue to advocate linear craniotomy. Those who have survived the operation have in some instances improved, but there is no evidence to show that such improvement would not have taken place by as persistent efforts at training before the operation as after. Time, that important element which should be taken into consideration in estimating the results of linear craniotomy, has been lost sight of, in the haste to report the operation. The efforts put forth to elicit improvement, and the attention given the child by the parents and all interested in the case, would even in the most profound cases of feeble-mindedness, have some noticeable mental improvement as a result. Those who are familiar with the training of feeble-minded children, have found no encouragement in the operation, and one after another have assured me they have little "sympathy with that kind of surgery."

Persistent physiological education, such as is to be had in thoroughly equipped institutions, can accomplish more without linear craniotomy as an adjuvant.

Epilepsy.—The treatment of epilepsy has received much attention during the past year, both by surgeons and neurologists, and while our knowledge of the pathology of this disease is still very obscure, we have advanced appreciably, as to the value of surgical interference.

All who are familiar with epilepsy are aware of the persistency of the attacks in spite of all treatment, and how comparatively few cases are cured, clinical reports to the contrary notwithstanding. In a paper read before the Illinois State Medical Society last year, on epilepsy, I said: "All we can do generally in the treatment of this disease, is to render less frequent and less severe the attacks; the removal of peripheral irritation makes the case more hopeful, but statistics are not encouraging as to complete recovery, probably due to the establishment of the epileptic habit, which is due to the adjacent brain centres having become irritable and unstable." These statements were severely criticised, my prognosis was said to be too gloomy, and the outlook for epilepsy too discouraging.

Another year's observation and study only confirms my belief more strongly, for epilepsy is, as yet, a Gordian knot for the neurologist and surgeon to untie. Gray, Sachs, Ferrier, Dana, Wilmarth and other authorities have contributed to the literature of epilepsy, clinical observations which sustain my humble opinion.

Surgical interference is justifiable and should be advocated in all cases of traumatic or organic epilepsy, providing sclerosis is not too far advanced.

In focal epilepsy, we cannot predict the results following excision of the localized seat of irritation, first, because conditions more severe than the epilepsy itself may follow removal of the cortical substance; and second, we cannot give assurance of the cessation of the spasms. I have in mind a case to which the first statement applies; a boy, an epileptic, trephined, and portion of cortex removed. The epilepsy ceased, but the boy became an imbecile, and is now an inmate of an institution for feeble-minded children. My second statement is illustrated by another case, a boy, trephined; epilepsy still continues; fits are more severe, and this boy has since been admitted to a feeble-minded institution. We must not overlook the fact that injuries comparatively slight, and which would do little if any damage to the brain of an adult, in a child produce disastrous effects and diffuse sclerosis results. Wilmarth, in his autopsies, has repeatedly demonstrated this fact, and while associated with him I had this so impressed upon me, that I am loth to advise trephining in the epilepsies of childhood, unless taken very early in the history of the case, and even then we cannot offer much hope, for as Wilmarth says in his cases, "My postmortem studies have led me to believe that while considerable injury may be inflicted on the adult brain with no great impairment of the mind resulting, the contrary holds in the child, and brain injury from accident or disease is sure to permanently impair mental growth." Osler likewise pointed out to me, during his study of the cerebral palsies of childhood, the very diffuse formation of blocks of sclerosis, and the improbability of surgical relief.

In his book, he says, "there are several circumstances which militate against the probable success of operations of this kind. When sclerosis exists the area is usually too large for removal and it is only in exceptional instances, we could expect the epilepsy to be relieved. I do not think that in any of the cases which I have reviewed, the anatomical condition offered the slightest possibility of relief from surgical interference."

What then is to be the future of surgical interference in the epilepsy of childhood? We must be guided by the nature of the case; often, no doubt, we can by operating arrest the progress of the disease, perhaps cure. Further, as Sachs says, in the cerebral palsies of childhood, the paralysis which so often proceeds the epilepsy will be the guide for operative procedure by localizing the irritation; the centres should be exposed and be treated in accordance with the special indications of the case.

He is confident that if these cases of infantile cerebral palsies are more generally recognized and if we succeed in checking the tendency to epilepsy in them, the total number of epileptics will be notably diminished.

Defective Sensory Perception.—Operative interference in cases of defective sensory perception, as presented by Starr, in a recent paper on cerebral atrophies of childhood, seems to me, to open up a field for observation for the neurologist; one promising some benefit in preventing, or at least ameliorating, the condition of that great class of defectives, the blind, and the deaf and dumb We all know that many, many of these cases, especially of the deaf and dumb, owe their trouble to cerebral diseases. Diseases which medical treatment has failed to relieve and we cannot but hope that surgery may ultimately find a way to benefit this unfortunate class. Deaf mutism is little understood, and less studied by the neurologist, in fact a thorough etiological study of this prevalent condition from the standpoint of neuro-pathology has not been scientifically undertaken. Through the kindness of Dr. Gillett, Supt. of the Illinois Institution for the Deaf and Dumb, the largest institution of its kind in the world, I have commenced the study of deaf-mutism, and hope to report my progress at the next meeting of this Association.

In conclusion, I would say surgery has its field of usefulness in cerebral diseases of childhood but is limited by the pathology and the degree of success following operations. To scientifically recommend surgical interference, we must be sure of our diagnosis, pathology and permit of extreme limits in our prognosis.

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SECTION OF STATE MEDICINE.

First Day—June 7.

Afternoon session—Present, Doctors Benjamin Lee, A. W. Bell, C. F. Ulrich, Francis A. Atkins, Charles Lindsley, J. H. Hamilton, J. W. Hamilton, J. Berrien Lindsley, Irving A. Watson, Laurence F. Flick, Joseph J. Hibbard, Ralph E. Starkweather, Charles H Shepard, Jerome Cochran, Charles McIntyre, Thomas A. Foster, Charles D. Alton, W. L. Schenck, W. S. Davis, R. H. Reed, Delos Fall, S. C. Johnson, Felix Formento, J. T. Reeve, William Bailey, A. Hazelwood, U. O. B. Wingate, Albert L. Gihon, Walter Wyman, T. D. Crothers, Alonzo W. Garlock.

Session called to order at 3:30 o'clock, Dr. Lee in the chair.

Dr. Lee read his address, subject, "The Responsibility of the State and National Government in regard to the Protection of the Purity of the Water Supply."

Dr. Lee introduced his paper by some remarks upon the work of the Section. On motion thanks were returned Dr. Lee.

Report of Committee of School Hygiene was deferred upon motion on account of the absence of chairman.

Dr. J. Hardy Reed read his report of the Committee on Improvement in the Work of the Section.

The chairman asked what was the action of the Society at the morning session in the matter embodied in this report.

Dr. Reed answered that nearly all the provisions recommended in his paper were adopted. He said further that members ought not to be permitted to vote in different Sections. Dr. Hibbard wanted to know how the paying of dues in the Section would prevent the voting in other Sections. Dr. Reed thought the plan suggested would prevent the repeating of votes in various Sections. Dr. Bell said that the adoption of the amendment in the general Society covered the entire matter and thought it would obscure matters to try anything further now.

Dr. Bell moved that the report of the committee be received and the committee dismissed.

Dr. Starkweather seconded the motion, but asked that the committee be continued.

Dr. Reed moved as a substitute that the report be adopted so far as it was in accord with what had been done in the general Society at the morning session.

Seconded by Dr. Hibbard and passed.

The chairman stated that this ended the work of the Section for the day. He stated further that with the consent of the Section, Dr. Bell would read his paper which was down for the next day. Dr. Reed said that if agreeable he would like to present his report on the meat question. Consent was given to Dr. Reed to present the report.

The chair announced as a Committee on Nominations, Dr. Lindsley, of Connecticut, Dr. Starkweather, of Illinois, and Dr. Schenck, of Kansas, and requested that they report at 3 o'clock the following day.

The chair announced that this Section would have to elect an Executive Committee of three to form the Business Committee of the Association. Nominations were called for.

Dr. Starkweather nominated Dr. Lee, Dr. Flick nominated Dr. Davis, of Chicago, and Dr. Reed, of Mansfield, Ohio. Dr. Ulrich asked how it is to be determined who shall serve one, two and three years.

Dr. Starkweather moved that the Secretary cast one ballot in favor of the nominees. Passed.

Chairman asked in what order the names should stand.

Dr. Reed moved that the order be: Dr. Lee, three years; Dr. Davis, two years, and himself one year.

Motion seconded and carried.

Dr. Reed read his paper on the meat question.

Before reading his paper he made a brief statement of the methods practiced in the slaughtering pens. He witnessed the slaughter of unhealthy cattle. The number of inspectors is too small to do the work properly. He said he had carefully watched this.

His paper consisted of a series of resolutions.

It was moved and seconded that the report be received and adopted.

Dr. Hibbard said he had been much interested in the inspection at Kansas City. The inspector at Kansas City said to Dr. Hibbard that he (the inspector) would not publicly make any statement, but would give it privately. He told Dr. Hibbard that two men made the anti-mortem examination or inspection, and that those two men were merely butchers with great experience. That the close inspection was only made in cases reported as suspicious by these two men. Cases that were clearly unhealthy, were condemned and sent to the phosphate department. He said the business itself protected the public somewhat because the firm could not afford to send out bad meat. Dr. Hibbard stated that he himself, after what he had heard and seen had pretty good confidence in the inspection.

Dr. Reed said that only cases in which tuberculosis was suspected were really closely examined. Under the present methods no protection is had against hog cholera. In manufacturing the various things made out of hog's intestines no care is observed. In cleaning the intestines for sausages, they are thrown in a barrel and allowed to remain there until they become so offensive as to be almost unbearable, and are carelessly cleaned out of these barrels. Intestines when cleaned for sausages still contained mucus, and other foul matter. The Bologna sausages are dried instead of smoked. Only two hours are given to smoking. It is such prepared meat as this that causes poisoning. The hams are cured in four or five days. They inject the hams with pyroxilic acid and other matters. The packing house ham has a peculiar sourish smell. It is important that there should be a more perfect method of inspection. The hogs are drawn up by the legs, stuck, scraped, all of which is done in a few moments.

Dr. Jerome Cochran said that this information is apt to put us out of the humor of eating meat and he favored the motion.

Dr. Fall asked Dr. Reed if the microscopic examination is not made solely to discover the trichina.

Dr. Lee asked if sheep are taken through the packing house.

Dr. Reed answered they were.

Dr. Hibbard said he thought it very desirable to appoint a committee to expose these deceptions if they are practiced.

Dr. Flick spoke in favor of the resolution.

Dr. Schenck said he entirely agreed with Dr. Reed. He said the greed for money was apt to make the meat men indifferent to the healthfulness of the meat. He thought, however, that the great difficulty would be that the committee would have no powers.

Dr. Cochran said it would be well to appoint a committee of three who are to report to-morrow. He suggested that Drs. Reed, Schenck and Hibbard be placed on the committee.

Dr. Reed said the cases may not be injurious but it is not right that inferior meat be sold as first class.

Dr. Starkweather said he thought it a serious thing to give the enemies of the food problem too much information.

Dr. Lindsley agreed with Dr. Starkweather.

Dr. Bell was called to the chair and Dr. Lee took the floor. He said it was important to consider the question carefully. As sanitarians we have no right to inquire whether a thing is of full value. We are only concerned with its healthfulness.

Dr. Cochran moved that the resolutions be referred to a committee.

Motion passed.

Dr. Schenck asked that he be not named on the committee. Committee, Drs. Reed, Starkweather, and Prof. Fall. Prof. Fall asked to be relieved from service on the committee and Dr. Cochran was appointed in his place. Adjourned at 6 p.m.

June 8, 1892.

Meeting called to order by Dr. Lee, Chairman.

Report of Nominating Committee was called for. The chairman being absent Dr. Starkweather reported as follows:

For Chairman, Dr. Charles A. Lindsley, of Connecticut, for Secretary, Dr. Samuel P. Duffield, of Detroit, Mich.

It was moved and seconded that the secretary cast the ballot for the election of these gentlemen. The motion was carried and the secretary cast the ballot.

The report on the meat question was called for.

Dr. Reed read the report.

He suggested that the committee to be appointed under the report, if any is to be appointed, ought to be comprised of members living near the slaughter houses.

Dr. Cochran expressed a desire that the report be well discussed. He said we ought to consider the question carefully. The United States government is concerned, large interests are involved. For this reason we should go carefully and be certain of our facts before acting. He said he had his doubts about the wisdom of making an inspection at all. There is filth and filth, much filth that is objectionable as a matter of sentiment, is not objectionable as a matter of health. The first question is, what makes beef products unwholesome? This must be determined first. Until we know what to do we ought to act carefully.

Dr. Reed replied: The part which the government plays ought not to influence us. We are here as sanitarians. The work is new and defective, hence we ought to look into it and give our advice as sanitarians and our aid. We should investigate the matter and see how the law is carried out, and in what way the law might be enforced.

Dr. Hibbard said that he does not see how we can proceed in an investigation without having something to base an investigation on. The animal that is slightly unhealthy may nevertheless be healthy food. He was willing to go so far in this matter as to look for further information on the subject, but thought it would be better to be certain of the facts before going any farther.

Rr. Reed said there must be some misunderstanding on the subject. The object of the resolution is to get information. The government assumes that a diseased animal is unhealthy. Now, the question is how far they can carry that assumption.

Dr. Gihon asked that the report be read. This was done.

Dr. Gihon then asked who would pay the expenses of the committee.

Dr. Reed answered that no one was asked for pay.

Dr. Gihon—Then the committee will merely be on paper.

Dr. Reed—I refer the members to the report of the Committee on Hygiene which cost about $700.00, and which was made without any cost to the Section. This can be done the same way. The meat question is a public one and belongs to us legitimately as sanitarians.

Dr. Greenlief, of Kentucky, said it made some difference whether the disease was local or general.

The Chairman said Dr. Greenlief was off the subject.

A vote was taken on the resolutions and they passed by a rising vote 13 in favor, and 5 against them.

Dr. Lee asked for an expression as to how many should go on the committee.

It was decided to place the number at five.

Dr. A. N. Bell, of Brooklyn, read a paper on "Needful Legislation for the Protection of Human Life."

Dr. Comegys opened the discussion. He said that all Dr. Bell said about the necessity of disinfecting ships,etc., must be admitted, but he differed somewhat with Dr. Bell as to the means to be employed to bring about the desired result. The question is, can they be disinfected by the State? It is a question of executive power. Which would be most efficient, a department of Public Health, or some other department, such as the department of war? The question should be left with the medical men. The medical profession is in the best position to know what is needed in preventive medicine. The quarantine department cannot cope with this entire question. The Board of Health has been a failure in this matter. Public welfare is closely connected with the practice of medicine. We need a Department of Public Health. It would bring about reform in medical education.

Dr. Formento said that while he agreed with Dr. Bell in most points, there are some things he cannot allow to go by without a protest. He believes that State Boards of Health can in themselves cope with the question. New Orleans has kept out disease since 1878 on her own resources.

Dr. Cochran said he had a few ideas upon this question which he desired to present. He would be glad if a law could be passed to create a Department of Public Health. He did not believe that Congress would even give the matter serious consideration at present. We might do better by asking less. It might be well to ask for a Commissioner of Health. He said he had reason to believe that a bill could be passed creating the office. He would suggest that if there is ever a Commissioner of Public Health, he ought to annually call a conference of officers of Boards of Health to consult them. There has been a great tendency to interfere with the functions of State Boards of Health.

Dr. Wyman said that if it is thought there are no quarantine laws he felt called upon to explain the situation. There are eight quarantine stations at present, that is, eight national stations. Most of these are or are becoming places of refuge. The relations between the national and local stations are most cordial. So great is the fear of yellow fever in the South that during hot weather the southern cities require all ships whether infected or not to be disinfected if they come from questionable ports. A bill has been introduced to perfect the quarantine laws ;this will not intrench upon the Boards of Health.

Dr. Comegys desired to say further that nothing has been done to interfere with the quarantine department or the Boards of Health, in the effort that has been made to secure the appointment of a Commissioner of Health. He then read a circular on the subject.

Dr. Bell, in closing the debate, said he did not want to interfere with the Boards of Health, but to better organize them. He wants to arraign our government for neglecting the health of the people. We need a National Health Department that will coördinate with State Boards.

On motion, Dr. Bell's paper was referred to the Committee on printing.

In addition to the names recorded before as having been registered there are those of A. J. Fuller and T. B. Greenley.

Dr. Crothers read his paper on "The Sanitary Side of the Drinking Question."

Dr. Cochran in discussing Dr. Crothers' paper said he thought the suggestions made in the paper were well worthy of consideration.

Dr. Hibbard said he approved of the beginning and ending of the paper but condemned the middle. It is a great mistake to suppose that drunkards can be cured by imprisonment. There is some benefit in imprisonment however. He does not believe in abolishing saloons, but in taxing them in order that good would be accomplished. Reformatories ought to be supported by this tax.

Dr. Cochran said further, that there was a great deal in the paper that is untenable, but the general trend of the paper he endorsed.

Dr. G. H. Hamilton said that this subject had attracted his attention for some time. He believes with the reader, that punishment or imprisonment does injury instead of good. Punishment for intoxication is wrong. The proper method is that suggested by the paper. He cannot approve of granting licenses.

Dr. Bell said he was very much gratified to hear Dr. Crothers admit there should be any punishment for drunkards.

Dr. Greenlief said he believed that too much importance was attached to the hereditary. He believed that it is an acquired taste or disease.

Dr. Starkweather called attention to the fact that Dr. Duffield was not registered.

Dr. Flick moved that the part of the report of the Committee on Nominations be referred back to the committee, dealing with the nomination for secretary. Passed.

The report of the Committee on Nominations states that Dr. Lindsley was absent and was not consulted about the nominations.

On motion adjourned.

JUNE 9, 1892.

Section called to order by Dr. Lee at 2:30 P.M.

The chair called for the report of the Nominating Committee.

Dr. Starkweather reported the name of the nominee, for the Secretaryship, to be Dr. Samuel P. Duffield, of Detroit. Dr. Duffield was elected.

The next business called for the paper of Dr. Shepard, of Brooklyn, on "The Public Baths as a Preventive of Disease."

Dr. Lee called Dr. Bell to the chair and took the floor. He said he wanted to speak of the Turkish bath as a therapeutic agent. The Turkish bath is such an agent because it is a hygienic agent. It will probably be a long time before our government will introduce public Turkish baths,but it is only a step in advance of the baths already instituted and will come.

Dr. Bell said there should be a distinction between the Turkish bath as an indiscriminated agent, and as a special agent. There should be a discrimination in its use.

Dr. Shepard in closing, said the danger from the Turkish bath would be obviated by proper education.

Dr. Ulrich said that Turkish baths should be associated with other baths and treated as a branch.

Dr. Flick spoke on "The Voluntary Association for the Prevention of Tuberculosis."

Dr. Duffield said that the question of contagion underlaid the subject under discussion. He thought that climate ought not to be overlooked. He thought cold played an important part in the etiology of the disease.

Dr. Ulrich said the remarks of the gentleman who had just spoken were very apropos, but in this Section we can only take advantage of those things at our command. Poor people cannot take advantage of a change of climate. There is great carelessness in the distribution of tubercular sputa. In this there is need of education.

Dr. Cochran said: I did not hear the paper read and possibly the questions I will ask have been answered. I would like to know what the members of this Section consider the principal avenue of introduction into the system of tuberculosis.

Dr. Cutter said he believed it was the object of the Section to get the views of all the members. He believed the principal avenue of introduction to be by the stomach.

On motion, adjourned until June 10, at 9 A.M.

JUNE 10, 1892.

Meeting called to order by Dr. Cochran in the absence of Dr. Lee.

A paper on "Kumyss" by Dr. Mount Bleyer, of New York City, was read by its title and referred to the Committee on Publication.

Dr. Francis H. Atkins, of New Mexico, read a paper on "A Bird's Eye View of New Mexico."

Committee on meat packing establishments, Drs. R. Harvey Reed, Mansfield, Ohio; J. F. Hibbard, Richmond, Indiana; W. L. Schenck, Topeka, Kansas; R. E. Starkweather, Chicago, Ill.; U. O. B. Wingate, Milwaukee, Wis.

Paper of Dr. Atkins referred to the Committee on Publication.

Resolutions were offered regarding the pollution of sewers; they were read and laid upon the table.

It was moved and seconded, that the officers of this Section be instructed to confer with the Section on Dietetics and Medical Jurisprudence with a view of consolidating the three Sections, and report at the next meeting.

Motion to adjourn *sine die*, carried.

LAURENCE F. FLICK, *Secretary*.

BENJAMIN LEE, M.D., *President*.

REPORT OF THE COMMITTEE ON IMPROVEMENT IN THE WORK OF THE SECTION.

Read before the Section of State Medicine, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

Mr. Chairman and Gentlemen of the Section:—Your committee appointed last year to report the best plan to improve the Section work of our Association, begs leave to make the following report:

WHEREAS, The real work of the American Medical Association has been and should continue to be done in the various Sections of the same; and,

WHEREAS, With the present arrangements the time for Sectional work is now so limited, in comparison with the amount of work to be done, as to greatly interfere with the practical accomplishment of the same; and,

WHEREAS, A great deal of unnecessary time is spent each year in the general session of the Association in legislative work, which is of no value or importance to anyone in the study of the science of his profession; therefore be it

Resolved, That it is the sense of this committee: 1. That the time devoted to Sectional work should be increased, and that the time now allotted to the general session of the Association should be limited not to exceed one hour each day, and that that hour be from 12 noon to 1 P.M.

2. *Resolved*, That we believe it to be to the interest of the Association that each Section should be to the Association as the States are to the Union, and that each Section should continue the election of its own officers and manage its own business, and report the same to the Association as the latter may require.

3. *Resolved*, That each Section have the privilege of preparing and adopting a constitution and by-laws for its own special government, and that its officers shall consist of a Chairman, vice-Chairman, Secretary and Executive Committee.

4. *Resolved*, That in selecting these officers the chairman shall appoint a nominating committee each year, consisting of three persons, no two of which shall be from the same State, territory or general division of the United States, and that each member of said committee shall place in nomination a complete ticket, covering all the officers to be elected, and that the Section choose by ballot their officers from the three tickets thus presented to them at each annual meeting.

5. *Resolved*, That the Executive Committee shall consist of three persons, one of which shall serve for one year, one for two years, and one for three years, and thereafter one new member shall be added each year, which shall consist of the retiring chairman of said Section.

6. *Resolved*, That the Executive Committees of all the Sections shall constitute the Advisory Council of the American Medical Association, and shall be empowered to nominate its officers at each annual meeting, and recommend for adoption such policy, changes, alterations and improvements for the management of the Association as they may consider for the best interest of all concerned.

7. *Resolved*, That said Advisory Council shall be empowered to elect its own chairman and secretary, and shall be required to make a report to the Association each year, which shall contain the officers nominated, and such other advice as they may see proper to give.

8. *Resolved*, That the members of the American Medical Association shall be required to pay their dues to the treasurer of the Section to which they belong, allowing them to select for themselves which Section they shall register in, which shall be the only Section in which they shall have voice in the election of the officers or any other Sectional work, but may attend other Sections, and read or discuss papers in the same at the option of said Section.

9. *Resolved*, That it shall be the duty of the Section treasurer to collect the annual dues for his Section, which shall be fixed by the Association, and report the same to the general secretary of the Association and turn over all money so collected to the general treasurer of the Association, taking his receipt for the same.

10. *Resolved*, That the custom of delivering general addresses to the entire Association be dispensed with as obsolete and valueless, and that only such work be enacted in the general session of the Association as is of special importance to the Association at large, and that all scientific work be confined to the Section to which it belongs.

11. *Resolved*, That all papers read before any Section thereof, shall be referred to the Executive Committee of the same, which shall have the power to reject such papers as they may elect and consider to the interest of the Section, and the Association at large.

12. *Resolved*, That the entire work of the Association be published in journal form as heretofore, but that each Section be furnished in reprint the special work done in said Section, including the papers and discussions of the same, which shall be neatly bound in uniform size and style, in paper backs and furnish free to each member, who shall have the privilege of purchasing as many extra copies as he may desire at a mere nominal price, which shall only cover the actual expense of preparing the same, and that those desiring better binding can be accommodated by paying extra amount necessary for the same.

All of which is very respectfully submitted.

R. HARVEY REED, *Chairman*.

REPORT OF THE SPECIAL COMMITTEE TO DEVISE A PLAN TO PURSUE IN THE INSPECTION OF THE PACKING HOUSES OF THIS COUNTRY.

Read in the Section of State Medicine at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, June, 1892.

Your Committee beg leave to report that they would respectfully recommend:

1. That a committee of not less than three nor more than five be appointed by the chairman of this Section, who shall conduct an inspection of the

packing houses of this country, which inspection shall be conducted solely in the interests of the public health, and at the same time shall observe that due care be taken not to unnecessarily interfere with the commercial interests of the same.

2. That this committee be instructed to especially investigate the protection provided against the marketing of trichinous or other diseased meat.

3. That this committee shall be instructed to use all practical diligence to obtain the coöperation of the Bureau of Animal Industry and the management of the various Abbatairs in question, to secure all the general and practical information possible regarding this important question and report the same to this Section.

4. That the preamble and resolution offered by Dr. R. Harvey Reed on "The Meat Problem of this Country" be laid upon the table until next year.

Very respectfully submitted.

R. Harvey Reed, Chairman.
Ralph E. Starkweather.
Jerome Cochran.

Dr. Cochran favors the plan outlined in the report of the committee if an inspection is to be made, but has grave doubts as to the propriety of making any inspection at all.

THE MEAT PROBLEM OF THIS COUNTRY.

Whereas, This is preëminently a meat-eating country, and that the greater portion of meat supplied our citizens is now slaughtered at the so-called "packing houses" of this country and transported, by rail or otherwise, in various forms, to the numerous markets of our cities; and,

Whereas, This trade has become so enormous that in one year alone 1,750,000 hogs, and 750,000 cattle, besides calves and sheep, were slaughtered and shipped to various parts of our country, as well as to foreign countries, by one firm alone; and,

Whereas, The Federal Government, on March 3, 1891, enacted a law to provide for the inspection of live cattle, hogs, and carcasses and products thereof, which are the subjects of interstate commerce, and for other purposes, and have placed this inspection in the care of a bureau, under the Department of Agriculture (a copy of which law is herewith attached, together with the rules and regulations for the inspection of live stock and their products, issued by Secretary Rusk); and,

Whereas, These inspections have largely been confined to the export trade, and the meat so exported sent out under an official seal of this government; and,

Whereas, It has come to our notice that said meat so imported to foreign countries has been found to be diseased, saying nothing of the meat that has not undergone inspection and which has been sold to the citizens of this country; and,

Whereas, It is claimed by the Department of Agriculture that the microscopists, who make these examinations, are only expected to examine 50 animals, of which they are required to make two examinations, cut their own sections and make their reports; and,

Whereas, As by personal inspection by the writer it has been ascertained to his personal knowledge that 10 microscopists were required to examine 800 hogs in a single day, on which two examinations had to be made, making in all 1,600 examinations, or an average of 160 microscopic examinations and reports for each microscopist; and,

Whereas, The anti- and post-mortem examination of over 1,200 cattle, 800 hogs, 500 to 600 sheep, and as many calves, were required to be made by four veterinary surgeons; Therefore, be it

Resolved, That this Section consider it a practical impossibility to make this number of inspections with accuracy by the number of examiners employed; and that it is detrimental to the public health to permit of the wholesale slaughter of animals and the general sale of such meat in the manner in which it is now done, without competent and complete inspections; and, further be it

Resolved, That it is not to the interest of the government to allow its brand to be placed on meat which has not been thoroughly inspected, in such a manner as to bear the most critical examination that may afterwards be made; and, further be it

Resolved, That this Section appoint a committee of no less than three or more than five, who are willing to assume this work, and that they be requested to make a personal investigation of the packing houses of this country, the manner of inspection, the kind of meat killed, its classification, the manner of shipping it, the manner in which it is prepared and such other information as may be of public interest, and report the same to this Section.

Very respectfully submitted,

Mansfield, O. R. Harvey Reed, M.D.

REGULATIONS FOR THE INSPECTION OF LIVE STOCK AND THEIR PRODUCTS.

U. S. Dept. of Agriculture, Office of the Secretary,
Washington, D. C., March 25, 1891.

The following rules and regulations, being additional to the rules and regulations heretofore made under the act of Congress approved August 30, 1890, are hereby prescribed for the inspection of live cattle, hogs, and their carcasses, by virtue of the authority conferred upon the Secretary of Agriculture under the provisions of the act of Congress approved March 3, 1891, entitled "An act to provide for the inspection of live cattle, hogs, and the carcasses and products thereof which are the subjects of interstate commerce, and for other purposes."

1. *Export Cattle Inspection*. The order and regulations providing for the inspection of export cattle and sheep, made October 20, 1890, under the provisions of section 10 of the act of Congress approved August 30, 1890, are hereby continued in full force and effect, the same as if made under the provisions of the act of March 3, 1891, and all exporters, to secure clearance for their shipments of cattle, must comply strictly with the said regulations.

2. *Meat Inspection*. The proprietors of slaughter-houses, canning, salting, packing or rendering establishments, engaged in the slaughter of cattle, sheep or swine, the carcasses or products of which are to become subjects of interstate or foreign commerce, will make application to the Secretary of Agriculture for inspection of said animals and their products.

3. The said application must be in writing, addressed to the Secretary of Agriculture, Washington, D. C., and shall state the location and address of the slaughter-house or other establishment, the kind of animals slaugtered, the estimated number of animals slaughtered per week, and the character and quantity of the products to go into the interstate or foreign commerce from said establishment; and the said applicant in his application shall agree to conform strictly with all regulations or order that may be made by the Secretary of Agriculture for carrying on the work of inspection at such establishment.

4. The Secretary of Agriculture, upon receipt of said application and after consideration thereof, will give said establishment an official number, by which all its inspected products will thereafter be known, and this number will be used both by the inspectors of the Department of Agriculture, and by the owners of said establishment, to mark the products of the establishment as hereinafter prescribed.

5. The Secretary of Agriculture will appoint and designate a veterinary inspector to take charge of the examination and inspection of animals and their products for each establishment which has been officially numbered, as prescribed by rule 3, and will detail to such inspector such assistants or other employees as may be necessary to properly carry on the work of inspection at said establishment. The inspector appointed, and all employees under his direction, shall have full and free access at all times to all parts of the building or buildings used in the slaughter of live animals and the conversion of their carcasses into food products.

6. The veterinary inspector in charge of said establishment will carefully inspect all animals in the pens of said establishment about to be slaughtered, and no animal shall be allowed to pass to the slaughtering room until it has been so inspected. Whenever any animal is found on said inspection to be diseased, said animal shall thereupon be condemned by the inspector, and the owner of the same shall at once remove it from the premises and dispose of it in such manner as may be provided by the laws of the State in which said animal is located.

7. The veterinary inspector or his assistant shall carefully inspect at time of slaughter all animals slaughtered at said establishment and make a post-mortem report of the same

to the Department. Should the carcass of any animal, on said post-mortem examination, be found to be diseased and unfit for human food, the said carcass shall at once be removed from said establishment under the supervision of the inspector and be disposed of in the manner provided by the laws of the State where slaughtered. Any owner of any establishment in which inspections are being made under the provisions of the act of March 3, 1891, who shall wilfully cause or permit any animal which, upon inspection, has been found to be diseased to remain on said premises beyond the time allowed by the inspector in charge for its removal, shall forfeit his right to inspection, and said establishment will, for such time as the Secretary may direct, be refused certificates of inspection upon its products.

8. The carcasses of cattle which leave said establishment as dressed beef will be stamped by said inspector with a numbered stamp issued by the Department of Agriculture, and a record of the same will be sent to the Department at Washington.

9. Each and every article of food products made from the carcasses of animals inspected will be labeled or marked in such manner as the owner of said establishment may direct; said label, however, must bear the official number of the establishment from which said product came and also contain a statement that the same has been inspected under the provisions of the act of March 3, 1891.

A copy of said label must be filed at the Department of Agriculture, Washington, D. C., and, after filing, said label will become the mark of identification showing that the products to which it has been attached have been inspected, as provided by these rules and regulations, and any person who shall forge, counterfeit, alter, or deface said label will be prosecuted under the penalty clause of section 4 of the act of March 3, 1891.

Each and every package to be shipped from said establishment to any foreign country must have printed or stenciled on the side or on the top, by the packer or exporter, the following:

FOR EXPORT.

(*a*) Official number of establishment.
(*b*) Location of factory.
(*c*) Number of pieces or pounds.
(*d*) Trade-mark.

In case said package is for transportation to some other State or Territory or to the District of Columbia, in place of the words "for export" the words "INTERSTATE TRADE" shall be substituted.

The letters and figures in the above print shall be of the following dimensions: The letters in the words "For Export" or the words "Interstate Trade" shall not be less than three-fourths of an inch in length, and the other letters and figures not less than one-half inch in length. The letters and figures affixed to said package shall be legible and shall be in such proportion and of such color as the inspector of the Department of Agriculture may designate.

10. The inspector of the Department of Agriculture in charge of said establishment, being satisfied that the articles in said packages came from animals inspected by him, and that they are wholesome, sound, and fit for human food, shall affix to the top of said packages meat inspection stamps to be furnished by the Department of Agriculture, said stamps bearing serial numbers, and the inspector will write on said stamps the date of inspection.

The stamp must be securely affixed by paste and tacks in such a way as to be easily read when the package is standing on its bottom. Not less than five tacks shall be driven through each stamp, one at each corner and one in the middle of the stamp.

The stamp having been affixed, it must be immediately canceled. For this purpose the inspector will use a stencil plate of brass or copper, in which will be cut five parallel waved lines long enough to extend beyond each side of the stamp on the wood of the package. At the top of said stencil will be cut the name of the inspector and at the bottom of said stencil will be cut the district in which the inspection is made. The imprinting from this plate must be with blacking or other durable material, over and across the stamp, and in such a manner as not to deface the reading matter on the stamp, that is, so as not to daub and make it illegible. The stamp having been affixed and canceled, it must immediately be covered with a coating of transparent varnish or other substance. Orders for stamps must be made by the inspector on the Chief of the Bureau of Animal Industry.

11. Whenever any package of meat products bearing the stamp of inspection shall have been opened and its contents removed for sale the stamp on said package must be effaced and obliterated from the package.

12. Reports of the work of inspection carried on in every establishment will be forwarded to the Department by the inspector in charge, on such blank forms and in such manner as will be specified in "instructions to inspectors of slaughtering establishments."

13. *Swine.*—The inspection of swine for export or interstate trade will be conducted in the same manner as prescribed in the foregoing rules, with the addition, however, that a microscopic examination for trichina will be required for all swine products.

14. When the slaughtered hog is passed into the cooling room of said establishment, the veterinary inspector in charge, or his assistants, will take from each hog two samples of muscle, one from the "pillar of the diaphragm" and the other from another part of the body, and said samples will be put in a self-locking tin box and a numbered tag will be placed upon the hog from which said samples have been taken and a duplicate number of said tag will be placed in the box with said samples. The boxes containing the samples from the hogs in the cooling room, so tagged, will be taken to the microscopist for such establishment, who shall thereupon make a microscopic examination of each box containing samples, and shall furnish a written report to the inspector in charge of the cooling room, giving the result of said microscopic examination, together with the numbers of the hogs from which samples have been examined.

15. All hogs reported by the microscopist to the inspector in charge of the cooling room to be affected with trichina will at once be removed from said cooling room of said establishment under the supervision of said inspector or one of his deputies, and be disposed of by the owner in such a manner as may be required by the laws of the State where said factory is situated.

16. The inspector in charge of the slaughtering or other establishment will issue a certificate of inspection for all carcasses of animals or the food products thereof which are to be exported into foreign countries, which certificate will cite the number of the factory, the name of the owner or owners operating the same, the date of inspection, and the name of the consignee and country to which said articles are to be exported. Said certificate will also contain the numbers of the stamps attached to the articles to be exported. One certificate only will be issued for each consignment. The certificates will be issued in serial numbers and in triplicate form. One copy thereof will be delivered to the consignor of such shipment, one copy will be attached to the invoice or shipping bill to accompany the same and be delivered by the transportation companies to the chief officer of the vessel upon which said consignment is to be transported, and the third copy will be forwarded to the Department of Agriculture for filing therein. J. M. RUSK,
Secretary.

An act to provide for the inspection of live cattle, hogs, and the carcasses and products thereof which are the subjects of interstate commerce, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Agriculture shall cause to be made a careful inspection of all cattle intended for export to foreign countries from the United States, at such times and places, and in such manner, as he may think proper, with a view to ascertain whether such cattle are free from disease; and for this purpose he may appoint inspectors, who shall be authorized to give an official certificate clearly stating the condition in which such animals are found, and no clearance shall be given any vessel having on board cattle for exportation to a foreign country unless the owner or shipper of such cattle has a certificate from the inspector herein authorized to be appointed, stating that said cattle are sound and free from disease.

SEC. 2. That the Secretary of Agriculture shall also cause to be made a careful inspection of all live cattle the meat of which is intended for exportation to any foreign country, at such times and places, and in such manner, as he may think proper, with a view to ascertain whether said cattle are free from disease and their meat sound and wholesome, and may appoint inspectors, who shall be authorized to give an official certificate clearly stating the condition in which such cattle and meat are found, and no clearance shall be given to any vessel having on board any fresh beef for exportation to and sale in a foreign country from any port of the United States until the owner or shipper shall obtain from an inspector appointed under the provisions of this act such certificate.

Sec. 3. The Secretary of Agriculture shall cause to be inspected, prior to their slaughter, all cattle, sheep, and hogs which are subjects of interstate commerce and which are about to be slaughtered at slaughter-houses, canning, salting, packing or rendering establishments in any State or Territory, the carcasses or products of which are to be transported and sold for human consumption, in any other State or Territory or the District of Calumbia, and in addition to the aforesaid inspection, there may be made in all cases where the Secretary of Agriculture may deem necessary or expedient, under the rules and regulations to be by him prescribed, a post-mortem examination of the carcasses of all cattle, sheep, and hogs about to be prepared for human consumption at any slaughter-house, canning, salting, packing or rendering establishment in any State or Territory, or the District of Columbia, which are the subjects of interstate commerce.

Sec. 4. That said examination shall be made in the manner provided by rules and regulations to be prescribed by the Secretary of Agriculture, and after said examination the carcasses and products of all cattle, sheep, and swine found to be free of disease, and wholesome, sound, and fit for human food, shall be marked, stamped, or labeled for identification as may be provided by said rules aud regulations of the Secretary of Agriculture.

Any person who shall forge, counterfeit, or knowingly and wrongfully alter, deface, or destroy any of the marks, stamps, or other devices provided for in the regulations of the Secretary of Agriculture, of any such carcasses or their products, or who shall forge, counterfeit, or knowingly and wrongfully alter, deface, or destroy any certificate provided for in said regulations, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding one thousand dollars, or imprisonment not exceeding one year, or by both said *punishments, in the* discretion of the court.

Sec. 5. That it shall be unlawful for any persons to transport from one State or Territory or the District of Columbia, into any other State or Territory, or the District of Columbia, or for any person to deliver to another for transportation from one State or Territory or the District of Columbia into another State or Territory or the District of Columbia the carcasses of any cattle, sheep, or swine, or the food products thereof, which have been examined in accordance with the provisions of sections three and four of this act, and which on said examination have been declared by the inspector making the same to be unsound or diseased. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor and punished for each offense as provided in section four of this act.

Sec. 6. That the inspectors provided for in sections one and two of this act shall be authorized to give official certificates of the sound and wholesome condition of the cattle, sheep, and swine, their carcasses and products described in sections three and four of this act, and one copy of every certificate granted under the provisions of this act, shall be filed in the Department of Agriculture, another copy shall be delivered to the owner or shipper, and when the cattle, sheep, and swine, or their carcasses and products are sent abroad, a *third copy* shall be delivered to the chief officer of the vsesel on which the shipment shall be made.

Sec. 7. That none of the provisions of this act shall be so construed as to apply to any cattle, sheep, or swine slaughtered by any farmer upon his farm, which may be transported from one State or Territory or the District of Columbia into another State or Territory or the District of Columbia: *Provided, however*, That if the carcasses of such cattle, sheep, or swine go to any packing or canning establishment and are intended for transportation to any other State or Territory or the District of Columbia as hereinbefore provided, they shall there be subject to the post-mortem examination provided for in sections three and four of this act.

Approved, March 3, 1891.

Dr. Holmes' Birthday.— August 29 passed by quietly with the venerable Autocrat. As compared with some of his birthdays, since he left the eightieth milestone behind, the day was uneventful. The health of Our Poet, physical and mental, has continued fairly comfortable, with the exception that the impairment of his eyesight prevents him from doing some forms of work that might be useful to himself and others.

EARLY NATIONAL LEGISLATION ON THE SUBJECT OF QUARANTINE.

BY STEPHEN SMITH, M.D.,

OF NEW YORK

(Continued from page 378.)

The Fourth Congress met at Philadelphia, December, 1795, at the close of one of the most alarming and widespread epidemics of yellow fever which had as yet been known. The conflicting opinions and acts of different State and municipal authorities in the adoption and enforcement of measures for preventing the importation and spread of yellow fever had excited much public comment. The fever was believed to be imported, and existing quarantines were regarded as inefficient, owing to a want of power on the part of the States to enforce their regulations. The questions which were raised in Congress were twofold, viz.: 1. Should not the establishment and management of quarantines be exclusively the duty of the General Government, under the provision of the Constitution empowering Congress "to regulate commerce?" 2. Is not a quarantine a police regulation of the State or municipality, and hence quite outside of this provision of the Constitution?

It is now a matter of great interest to understand the opinions of those who took part in thé first discussion of the relations of the General and the State Governments in the establishment and administration of maritime quarantine. A motion was made in the First Congress, which sat in New York, looking to the establishment of health offices in the several ports of the Union, but the exact purport of the motion was not known. The following were the proceedings, as given in the Journal of Congress:

"*Thursday, December* 16, 1790. A petition of the merchants and other inhabitants of Baltimore was presented to the House and read, praying that a health office may be established, or other provision made by law, for protecting them from infectious and epidemical diseases brought by passengers and others arriving from foreign countries.

"*Friday, December* 17, 1790. *Ordered*, That the petition of the merchants and other inhabitants of the town of Baltimore, which was presented yesterday, be referred to Mr. Seney, Mr. Vining and Mr. Parker; that they do examine the matter thereof and report the same, with their opinion thereupon, to the House.

"*Tuesday, December* 21, 1790. Mr. Seney, from the committee to whom was referred the memorial of sundry inhabitants of the town of Baltimore, praying the establishment of a health office, made a report, which was twice read and agreed to by the House, as followeth:

"Your committee have had under consideration the subject-matter of said memorial, and are firmly persuaded that the same highly merits the attention of Congress. But being convinced that the regulation prayed by the memorialists is not only essential for the port aforesaid, but for all others into which considerable imports are made, are of opinion that a law ought to be passed with general provisions in this respect.

"*Ordered*, That a bill or bills be brought in pursuant to the said report, and that Mr. Lawrence, of New York, Mr. Seney, of Maryland, Fitzsimmons, of Virginia, Vining, of Delaware, and Goodhue, of Massachusetts, be such committee."

There is no evidence that this committee reported, but the inference is that the petitioners contemplated the establishment of quarantines under national regulations and supervision, and that the project received the sanction of the first committee appointed to consider the petition.

The first representative who moved in the matter was from the State of Maryland, and the measure which he proposed was designed to place the quarantine systems of the United States entirely under the direction of the President, who at that time was General Washington. From the annals of Congress it appears that on the 28th of April, 1796, Hon. Samuel Smith, of Maryland, proposed a resolution to the following effect, which was referred to the Committee of Commerce and Manufacture to report thereon:

"*Resolved*, That the President of the United States be authorized to direct such quarantine to be performed on all vessels from foreign countries arriving at the ports of the United States as he shall judge necessary."

The committee consisted of the following members: Goodhue, of Massachusetts; Bourne, of Rhode Island; Livingston, of New York; Swanwick, of Pennsylvania; Smith, of Maryland; Parker, of Virginia, Smith, of South Carolina.

May 7, 1796, the committee reported a bill to regulate quarantine, which was read twice, and referred to a Committee of the Whole. It was as follows:

"*Be it enacted, etc.*, That the President of the United States be, and is hereby, authorized to direct at what place or station in the vicinity of the respective ports of entry within the United States, and for what duration and particular periods of time, vessels arriving from foreign ports and places may be directed to perform quarantine.

"*Be it enacted, etc.*, That the President of the United States be, and is hereby, authorized to direct the revenue officers, and the officers commanding ports and revenue cutters, to aid in the execution of quarantine, and also the execution of the health laws of the States, respectively, in such manner as may to him appear necessary."

On May 11, 1796, on motion of Mr. S. Smith, of Maryland, the House resolved itself into a Committee of the Whole, on the bill regulating quarantine.

Mr. Heister, of Pennsylvania, objected to the principle of the bill, as it proposed to take power from individual States to regulate what respected the health of their citizens, and to place it in the President of the United States. He thought the measure would be attended with very great inconvenience. Many States lay very distant from the seat of government, and before information could be given to the President of the apprehension of any pestilence being introduced, and his answer received, the disease might be introduced into the country and great havoc made among the citizens. It appeared to him that the government of each individual State was better calculated to regulate quarantine than the general government, because upon the spot. And if the power was to be transferred from the President to the collectors at each port (that he conceived must be the case), it would put a vast deal too much power in their hands.

Mr. Smith, of Maryland, said that each individual State had, or might have, its own health laws, but the performing of quarantine was in the direction of the general government. The President ought to be empowered to designate the place where vessels should perform quarantine, to enforce the performance, and to determine at what time of the year it should commence and end. It ought, he believed, to commence at the present time.

Mr. Kittera, of Pennsylvania, understood that each independent State had a right to legislate on this subject for itself; and if they had no regulations on the subject it was because they had not felt the want of them. He believed that each State understood its own concerns better than the general government, and therefore the regulation might safely be left with them.

Mr. Smith, of Maryland, denied that there was any authority in the State governments to regulate quarantine. They could not command the officer of a port to use force to prevent a vessel entering their ports; the authority over him was in the general government.

Mr. Milledge, of Georgia, opposed the bill. He said the State from which he came was in the habit of regulating quarantine, and that it would be attended with many inconveniences, if the power was to be placed in the general government, to the State which he represented; on account of its distance, it would be particularly objectionable.

Mr. Giles, of Virginia, said that self-preservation justified every State in taking means to prevent the introduction of disease among its citizens, and he thought the bill unnecessary.

Mr. Smith, of South Carolina, said the Constitution did not give to the State governments the power of stopping vessels from coming into their ports.

May 12.—Mr. Heister, of Pennsylvania, moved to strike out the first section. It appeared to him as if it would be taking the power of regulating quarantine from the State governments and placing it in the hands of the collectors at different ports; and, as he believed the collectors were interested in proportion to the quantity of goods imported, the health of our citizens and the interest of the collectors would be placed in opposition to each other.

Mr. Bourne, of Rhode Island, hoped the motion would not be agreed to. He thought it a necessary regulation. No inconvenience, it was true, had occurred in the State he represented, but he believed they were liable to have inconveniences from the want of such a law as this. By the aid of custom-house officers, who had concurred with the State, they had been able to effect every necessary regulation; but if these officers had refused them aid, they could not have stopped vessels with infectious diseases from coming into port—it being of the nature of a commercial regulation, to which, by the Constitution, Congress alone were competent. Without the first clause there would be a radical defect in the bill.

Mr. Swanwick, of Pennsylvania, said if the section were struck out the bill would have every desirable effect. All that was complained of was that the authority of any individual State could not compel vessels to perform quarantine; but if the President gave directions to the officers of the United States at every port to aid the State governments in this respect, every effect would be obtained. The first section of the bill went only to direct the time during which quarantine should be performed, and at what particular place, which would certainly be best determined by the State governments. Indeed, most of them having already fixed on places for the purpose, and erected suitable buildings for the sick, for purifying goods, etc., it would be attended with very great inconvenience if a different place were to be fixed upon by the United States. It was said the right of regulating quarantine did not reside in the State governments; he believed it did, and that the individual States had conceived so was evident from the expense which some of them had been at in erecting buildings, etc, for the purpose. He particularly alluded to the provisions made for this purpose by the State of Pennsylvania, on the Delaware.

Mr. Sitgreaves, of Pennsylvania, would ask his colleague to point out the inconveniences which would arise from passing the law in its present state. It was true that the State of Pennsylvania had made some regulations on the subject of quarantine; but, without the aid of the United States, they could not carry them into effect. They may direct, by their governor and board of health, quarantines to be performed, but they could not enforce any vessels to observe their directions, without the aid of the general government. Some States had, on this subject, no institutions at all; and where they existed it was reasonable to suppose that they would be properly respected by the President in the arrangements he should make under a law like the present. At any rate, no inconvenience need be apprehended from an exercise of a concurrent jurisdiction. If a State should direct one term of quarantine to be performed, and the President another, the longest term, which will comprise both, must be submitted to. But the strongest and best reason for a law such as the one proposed, is that it is matter of very serious doubt whether, upon this subject, the States had any authority at all, and whether all such power is not vested by the Constitution in the Congress, under their general authority to regulate commerce and navigation. He inclined to the last opinion, and believed, upon examination, it would appear to be well founded. On the whole, the provision contemplated might produce good effects, and could not be followed by any evil consequences, and therefore he should vote for it.

Mr. Milledge, of Georgia, spoke in favor of striking out the first section, and of the power of regulating quarantine being in the State governments. Savannah, in Georgia, he said, was one thousand miles from the seat of government, and from their situation in respect to the West Indies, they were very subject to the evil of vessels coming in from thence with diseases; and if they were to wait until information could be given to the President of their wish to have quarantine performed, and an answer received, the greatest ravages might in the mean time take place from pestilential diseases. The State of Georgia had a long law on the subject, and had always been in the habit of regulating quarantine without consulting the general government.

Mr. Bourne, of Rhode Island, spoke again in favor of the bill. It had been objected against the bill that the State might order quarantine to be performed for one length of time and the general government for another. That difficulty would be got over by observing the longest period.

Mr. Giles, of Virginia, said there appeared to him several inconveniences attending the bill. The gentleman last up stated that if a longer time was ordered for quarantine to be performed by either the State or general government, it should be obeyed in preference to the shorter. He believed this would not prove satisfactory. But how did the gentleman propose to get over the difficulty of different places being appointed by the two governments? If, said he, the States had already fixed upon times and places of performing quarantine, he thought it necessary for the general government to interfere in altering them. He thought both time and place should be fixed by the State; but if it were the business of the general government, it was legislative and not executive business. It was said some of the States had no regulations with respect to quarantine; but if they had not, when they found a necessity for them they would have them. It had been said that every useful purpose would be answered by the last clause; why, then, retain the first, against which there are so many strong objections? He hoped it would be struck out.

Mr. Kittera, of Pennsylvania, asked if a State should think it necessary to change the place of performing quarantine, whether the President could always have notice of the change in time, so as to make his regulations accordingly. He believed not. This would be one of the inconveniences which would arise from the first clause. He thought the second would answer every desirable purpose.

Mr. Smith, of Maryland, said that gentlemen who opposed the present bill insisted upon the authority to regulate quarantine being in the State governments. The gentleman from Pennsylvania (Mr. Swanwick) said that each State had its buildings for the purpose. This was not a fact. Some of the States had no regulations on the subject. At Baltimore they had built a hospital four miles from the port, but the State had no authority to stop vessels at it. He asked the gentleman from Georgia (Mr. Milledge) whether there was any power in that State which could stop a vessel of his from going into Savannah though she had sickness on board? He denied that it had. She will sail into port in defiance of their State laws. It was a commercial regulation, and therefore the business of the general government. Mr. S. said he brought in this bill that the regulations respecting quarantine might be authorized by the proper authority. It could not be supposed that the President would alter the places already fixed upon by the individual States without such good reasons as would convince them of its necessity. To suppose the contrary was an unworthy suspicion that the Executive would abuse his power. There were States which had no laws upon the subject. Maryland had a law which had been sanctioned by a law of the general government, and had been renewed this session.

Mr. Williams, of New York, observed that the gentleman last up had said that regulations respecting quarantine were commercial regulations, and therefore vested in the general government. The State of New York had never found any difficulty in causing vessels to stop at a certain place to perform quarantine. Philadelphia and New York had had occasion to make alterations with respect to the proper places of stopping, and they were certainly the best judges as to the propriety of those alterations. It appeared to him that the second clause would answer the purpose wanted. Not that he was by any means jealous of the power of the President, but he believed it would be best for the States to have the power of directing the time and place of performing quarantine, as they could more effectually carry their regulations into effect. The second clause directs that the officers of the general government shall aid State governments, which is all that is necessary.

Mr. W. Lyman, of Massachusetts, thought the individual States had the sole control over the regulations of quarantine. It was by no means a commercial regulation, but a regulation which affected the health of our fellow-citizens. In the town of Boston the small-pox was considered as pestilential disease, and they certainly had a right to make their regulations accordingly. He knew the United States could prohibit the importation of goods but he did not think it was in the power of the United States to prohibit the landing of persons. He believed the bill was unnecessary; that individual States had a right to make such regulations as were necessary for the preservation of the health of their citizens.

Mr. Hillhouse, of Connecticut, said that if gentlemen had been as near infectious disorders as he had been, they would have been convinced of the necessity of making some such regulations as were now proposed. He was not surprised that gentlemen who lived several hundred miles from the shore did not feel anxious about the matter. He thought it was an object which merited the attention of Congress. He knew there were local regulations in many States relative to this subject, which he did not wish to destroy. Gentlemen might as well say that the individual States had the power of prohibiting commerce as of regulating quarantine, because if they had the power to stop a vessel for one month, they might stop it for twelve months. This might interfere with regulations respecting our trade and break our treaties. At the same time, he allowed that the States were the best judges of time and place. Mr. H. proposed two amendments. One was, that the President should make regulations where individual States had not already done it; the second was to make it the duty of officers of the United States to assist the State governments to carry into effect their several laws, until Congress shall make regulations to the contrary.

Mr. Gallatin, of Pennsylvania, said he did not agree in the least with the gentleman from Maryland (Mr. Smith), that the power of regulating quarantine was exclusively in the United States. He conceived the only clause in the Constitution which could at all countenance such an idea was the article relative to commerce; but, he said, the regulation of commerce had nothing to do with commerce. It was a regulation of internal police. It was to preserve the health of a certain place, by preventing the introduction of pestilential diseases, by preventing persons from coming from countries where they were prevalent. Whether such persons came by land or water, whether for commerce or for pleasure, was of no importance—they were all matters of police. The individual States had thought themselves competent to prevent the introduction of slaves coming by sea, although that also might be called a commercial regulation, which they had no right to interfere with. And if a vessel belonging to the gentleman from Maryland was to come to the ports of Baltimore or Philadelphia with a cargo of negroes, he believed that the government of either place would be equal to the preventing of him from landing and disposing of them, though he would say it was an article of commerce. The State governments had also something to do with the internal regulations of their ports. That of Philadelphia was under the direction of wardens and of State laws. He had no objection to the United States assisting the individual States in enforcing their quarantine regulations, but he had an objection to their asserting that they had the sole right of making regulations on that head, or of making health laws for the individual States. He knew that where the legislatures of different States had legislated on the subject they had thought it an important branch of their duty. The words proposed to be introduced by the gentleman from Connecticut—"until Congress shall make regulations to the contrary"—seemed to say that the health laws of the several States were to continue only during the pleasure of Congress, but if the assistance of the United States was only necessary, the amendment of his colleague (Mr. Heister) would answer the purpose.

Mr. Smith, of Maryland, said the gentleman from Pennsylvania (Mr. Gallatin) differed in opinion from him with respect to the States having the power to stop vessels coming into their ports. It was true that the laws of the States of Maryland and Pennsylvania prohibited the importation of slaves, but a vessel might bring any quantity of negroes, provided, on landing, they were not sold. It has been said that the governor of Pennsylvania had stopped vessels from entering this port which were suspected of having diseases on board. That was, he said, before the fort was ceded to the Union. He had not the power now to do it. That such authority had been submitted to was true and proper, but he had no legal right to stop any vessel. The individual States make health laws, but they want the power to carry them into execution; they are good for nothing without such power. That the State of Pennsylvania had passed a health law and carried it into effect was no proof against his assertion. The law which he had now brought forward was meant to give full effect to the State laws. He had no objection to the amendment of the gentleman from Connecticut.

Mr. W. Lyman, of Massachusetts, observed that the gentleman from Maryland did not make the proper distinction. Quarantine was not a commercial regulation; it was a regulation for the preservation of health. If commerce was incidentally affected, it ought so to be, when the object was the preservation of health and life. The United States, it was true, could prevent the importation of any goods, whether infected or not, but it did not thence follow that they could permit the landing of infectious goods contrary to the laws of any State. The several States possessed the sole power over this subject. They were the best judges of the due exercise of it. The right to preserve health and life was inalienable. The bill was not only unnecessary and improper, but it was injudicious interference with the internal police of the States; neither would the amendment which had been offered by the gentleman from Connecticut (Mr. Hillhouse) ameliorate the bill; it would still be interfering with State policy. If that gentleman had any panics about infectious diseases, he might find relief in the laws of the State. If the laws there were not competent thereto at present, the gentleman might remonstrate to their legislature, and no doubt could exist but he would be suitably listened to. As to the argument that States neglected to made regulations, it proved that they supposed them superfluous. Whilst they forbear to do anything, it was proof that nothing ought to be done. The States are the best judges, and have the sole power to determine.

Mr. Kittera, of Pennsylvania, said his objections to the bill would be removed by the amendments of the gentleman from Connecticut. The only point in which they seemed to differ was, whether the President of the United States, or the government of each individual State, was best able to make the wisest regulations. If the first section passed, the President would most probably adopt the regulations of the different States; and by the second, the officers of the United States are commanded to aid in the execution of the State laws.

Mr. Heath was in favor of striking out the first section; he was, in fact, opposed to the whole bill.

Mr. Hillhouse, of Connecticut, said the first clause might be struck out. It was only necessary where no regulation was made. It was said that a regulation of quarantine had nothing to do with trade, but if a State, in order to prevent the introduction of certain goods from a certain country, were to order a quarantine of twelve months to be performed, would it not be destructive of commerce? It certainly would; and if a State had the power of stopping a vessel one month, she can extend it twelve if she pleases.

Mr. Giles, of Virginia, said he did not know which States had legislated on this subject, and which had not. He did not know that any of the States had not legislated upon it; but if they had not done it, they could do it. The gentleman from Maryland (Mr. Smith) had said, to regulate quarantine was a commercial regulation. They were legislating, not upon commerce, but upon preventing the introduction of pestilential disorders. Were these objects of commerce? If a State stops a ship. she does not stop it on account of the goods it contains, but because it contains an infectious disorder which, if it were considered as an article of commerce, certainly ought, at least, to be a contraband article. He did not believe there was any necessity of interference; but, if there was any want of ability to enforce obedience to the laws of the State, he had no objections to furnish it, and that would be done by the proposition of the gentleman from Pennsylvania (Mr. Heister).

Mr. Swanwick, of Pennsylvania, said, if it were to be admitted that the general government were to take upon it the regulation of health, he would ask whether the first section of the present bill contained any regulation of this sort? The State of Pennsylvania, he said, had been at great expense in erecting necessary buildings for the reception of persons and goods infected with diseases. It was to be lamented that gentlemen had not before found out that this was the business of the general government, for it had been a very expensive undertaking to the State of Pennsylvania to provide the necessary buildings for carrying their quarantine and health laws into execution, and they would gladly have turned it over to the United States. He thought the utility of this business remaining in the State government was evident. Commercial regulations were placed in the general government to prevent one State having advantages over another in respect to commerce; but with respect to health, every State was certainly the best judge, and the claim was imperious; and if it were under the power of the general government, and government was to neglect to take the necessary measures, the State would itself take them. During the late sickness at New York it was thought necessary to appoint special committees to aid the State government in this city. The gentleman from Maryland had asked if a State government could stop a vessel from entering any of its ports? If not, they had been infringing on the laws for several years. The governments of New York and Pennsylvania were in the constant habit of preventing ships from entering their ports until they had been examined with respect to their healthiness. Gentlemen had talked about their abode being near or distant from seaports. He could see no use in such observations. It was certainly of first consequence to guard the health of their citizens by every possible means. He said at this port they had laws respecting wardens; there was also in the different States inspection laws, which in some degree affected commerce, but were not the kind of regulations prohibited by the Constitution; these did not interfere with the rights of Congress to regulate commerce. Gentlemen had brought another subject into view, which he could not see any good reason for doing; they had charged gentlemen opposed to this law with being unreasonably jealous of the power of the Executive. Surely, to prevent the landing of diseased persons, or infected goods, could not have any relation to a jealousy of that power. This subject was too often introduced, when, he believed, there was no real occasion for it, though he hoped they never should be wanting in entertaining any justifiable jealousy of the extension of any of the powers of government, if these should be conceived to have been improperly exercised, but he knew of nothing of this kind at present.

Mr. Smith, of South Carolina, said if this question be a mere question of acquiescence in the State laws there might be a propriety in the Federal government overlooking those laws; but it was essentially connected with the powers of Congress on an important subject. He had been surprised to hear gentlemen assert that this subject was not of a commercial nature. The gentleman from Virginia (Mr. Giles), had said diseases were not articles of importation, or if they were, they were contraband; but gentlemen must know that importations of all kinds were under the regulation of Congress, and contrabands as much as any other. Consider how epidemical diseases, imported, affect the United States at large. They do not merely affect the city where first imported, but they obstruct the commerce of all others; they not only embarrassed the commerce, but injured the revenues of the United States. Another point of view in which it had an effect: The laws regulating the collection of imports were counteracted and obstructed by the laws regulating quarantine, and would any gentleman say that a State Legislature had the power to contravene the act of the Federal government to obstruct all the laws by which it collects its revenues? It had been said that this subject could be better considered in each individual State than we could possibly settle it. Who are we? Are we a foreign government? Gentlemen had already forgotten their arguments on former occasions when speaking of the power of the House; they could then do anything and everything; and the people looked up to them alone for protection. If the subject was vested in the general government it was their business to protect the health of their fellow-citizens as much as their property; because, if the performance of quarantine was neglected such neglect naturally tended to affect the lives as well as the revenue and commerce of the citizens throughout the United States. He, therefore, thought it a subject perfectly within the Federal jurisdiction; and as there were States which had no law upon the subject, and as their legislatures had now generally risen, the passing of this law would prevent the necessity of resorting to revolutionary committees of their citizens. Their refusing to legislate upon this occasion would be inviting the people to do the business by committees. The gentleman from Pennsylvania (Mr. Swanwick) had referred to the laws of that State. He thought they had some very exceptionable laws; in particular, their poll-tax on persons coming by water into their State. He thought it would be deviating from the spirit of the Constitution.

Mr. Page, of Virginia, said he should vote for striking out the first section. He should even wish to vote against the bill itself, as it was an attempt to extend the power of the Executive unnecessarily. We might as well undertake to form a system of police force for every city in the Union. The State legislatures could not be interested in opposing the landing of goods any more than Congress, and therefore would not be disposed to do it, except when their health would be endangered by it; but if he were to put in competition the interest of the revenue and the right of the people to preserve their health, which was one of the first rights of nature, he should certainly adhere to the latter at the expense of the former. The master of the vessel who refused to stop at the port of Baltimore, agreeably to the orders of the State government, might have been prosecuted.

at common law. If gentlemen had no other object in view besides the preservation of the health of their citizens, they ought to be satisfied with the second clause, which went to the directing of the officers of the United States to aid the State government in obliging vessels to perform the necessary quarantine. The first clause had only a tendency to extend the prerogative of the President.

Mr. Bourne, of Rhode Island, said gentlemen supposed it to be the duty of the President to coöperate with the individual State governments with respect to the performance of quarantine; but he believed the States would think it an improper interference except he were authorized by law. It was a duty of the President, expressly enjoined by the Constitution, to execute the laws of the Union, but it was not to execute the laws of the State. The gentleman last up had observed that self-preservation required that every State should attend to its own health; but it must be allowed without some check in the United States that the commerce and revenues of the United States were liable to be materially affected by the regulations relative to quarantines; for if the State governments were once allowed to have the power of stopping vessels to perform quarantine, they might prohibit the commerce of any country at pleasure; the vessels from any particular country might be stopped for so long a time, or totally prohibited so as to ruin the commerce with such country on pretense of the vessels containing diseased cattle or other infections. It would be said that this would be an abuse of the power which could not be expected, but if the States had the power they could exercise it as they pleased. If they had the power of regulating quarantine they could not carry it into effect without the aid of the United States, who alone possess the power of regulating navigation and commerce. And he believed that no damages could be recovered (as the gentleman from Virginia supposed) against any master of a vessel who had refused to obey the laws of any State with respect to the performance of quarantine, unless the authority of the United States should interpose by making some legal provision for their being carried into effect so far as they may relate to commerce and navigation.

Mr. Holland, of North Carolina, said that in an inquiry into the subject whether the general government or State legislatures were the best judges of the measures necessary to be taken for the preservation of the health of the several States, it would occur that, the extent of the country being so great, it would be difficult to say what regulation would be best suited to all the ports of the Union, for what would be salutary and proper for one might be improper for another. From this circumstance it would seem that each State should have the power to pass its own laws on this head, and, if so, the first clause should be struck out; to preserve one's health was an article of self-defense. Every individual should take his own measures to preserve his own health, and each State should judge of the best way of doing for its own districts. He had no objection to the calling in of the aid of the general government to the execution of the State law, but not to regulate the time and place of performing quarantine. This was contemplated in the second resolution, and the first was therefore unnecessary. The Constitution being silent in respect to health laws, he supposed the passing of them was left to the States themselves. Those who yet have no laws on this subject will make them when necessary. The question, in his opinion, was by no means a commercial one. The gentleman from Maryland, being a commercial man, may be excused from considering it as one, as he readily converts most things into a commercial view.

Mr. Brent, of Virginia, was in favor of striking out the first clause of the bill under consideration, not from any jealousy of the Executive, but because the Constitution did not authorize such an interference. If the doctrines of the gentlemen from Maryland and South Carolina were true, they would swallow up all of the authority of the State governments. They had suggested that if the State legislatures had the power they might use it so as to injure the general government. He would ask whether this would prove that they did not possess the power? If they possessed the power and exercised it so as to injure the interests of the United States, the Constitution of the Union, he believed, would point out a remedy. The gentleman from South Carolina had said that if the State governments were possessed of this power they might impair the revenue of the United States, and that, therefore, being connected with commerce, the regulating of quarantine must be in the power of the general government. He would ask whether the different States had not the power of regulating the inoculation for the small-pox? Yet this might be so ordered as to affect the trade and commerce of this country, and yet no one would say they had not the power of doing this. If the construction now contended for was carried to its extent, there would be no bounds to it. The States ha always been considered as possessing the power of regulating quarantine. Such was the opinion at the time of adopting the Constitution, and under this impression the States had passed laws on the subject; nor did he believe that necessity, expediency, or policy required that the power should be changed. If this was the case, the question could only be brought forward for the purpose of establishing a constitutional principle, and which he should certainly oppose.

The question for striking out the first section was put and carried, 46 to 23; and the bill was ordered to be engrossed for a third reading.

Friday, May 23, 1796, the bill relative to quarantine was read a third time and passed.

In the Senate, Tuesday, May 24, 1796, Mr. Rutherford, *of New Jersey, from the committee to whom* was referred the bill sent from the House of Representatives, for concurrence, entitled "An act relative to quarantine." reported that the bill be amended by inserting, after the word "that," "until general regulations relative to quarantine are made by law." And on the question to agree to the report it was determined in the negative.

Wednesday, May 25, the bill was read a third time and passed.

Approved May 27, 1796.

(To be continued.)

Medicine in the Early Christian Centuries.—Professor Harnack has recently published an essay, entitled *Medicinische aus der altesten Kirchengeschichte*, or medicine in the earliest church history. It is a part of the eighth volume of von Gebhardt and Harnack's *Texte und Untersuchungen zur Gesichte der Altchristlichen Literatur*, in its fourth fascicle. This essay very thoroughly explores the fields that have been examined casually before; it also gives references that are new to nearly all medico-historical compilations.

Prize Essays on the Action of Alcohol and its Value in Disease.—The American Medical Temperance Association, through the kindness of J. H. Kellogg, M.D., of Battle Creek, Mich., offers the following prizes:

1. One hundred dollars for the best essay "On the Physical Action of Alcohol, based on Original Research and Experiment."
2. One hundred dollars for the best essay "On the Non-Alcoholic Treatment of Disease."

These essays must be sent to the Secretary of the Committee, Dr. Crothers, Hartford, Conn., on or before May 1, 1893. They should be in type writing, with the author's name in a sealed envelope, with motto to distinguish it. The report of the committee will be announced at the annual meeting at Milwaukee, Wis., in June, 1893, and the successful essay read.

These essays will be the property of the Association, and will be published at the discretion of the committee. All essays are to be scientific, and without restrictions as to length, and limited to physicians of this country. Address all inquiries to T. D. Crothers, M.D., Secretary of Committee, Hartford, Conn.

A New Text-Book on Anatomy.—P. Blakiston, Son & Co., announce for early publication a new and systematic text-book on Anatomy, prepared specially to meet the requirements of the students and surgeons of to-day. The retail prices will be from six to eight dollars in cloth and leather bindings.

Prof. J. H. Thompson, Kansas City, reports a case of hæmorrhage after enucleation of an eye—probably the first on record, though likely to occur in any case of hæmophilia.

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SATURDAY, OCTOBER 1, 1892.

THE IMMIGRANT SHIPS AND OTHER POINTS OF MARINE HYGIENE.

MEDICAL DIRECTOR GIHON addressed the Kings County Medical Society, New York, September 6, his subject being "the hygiene of cholera." We select the following striking paragraph, which will do good if it is circulated widely through the medical press. The quotation is made from a special number of the *Brooklyn Medical Journal*, dated September 10. After reciting some of the dangerous conditions, in the homes of our people, in cholera seasons, DR. GIHON proceeds to show the need of reforms in the matter of immigration. He said:

"Now if houses are foul, what do you think of ships? You probably never have seen a Russian Jew when he starts for this country. He is a man who probably has never washed in his life; he is a man who certainly has worn the rags upon him as many years as these rags would hold together. You put that man in a crowded steerage, he becomes seasick (this same thing applies to the women); he vomits, his dejecta are thrown out in that bunk, it becomes saturated with seasickness, and then he becomes choleraic. Will you tell me what amount of cleansing will put that ship in condition again for a long time, except all such men are taken out and then she is thoroughly washed and cleaned? All these ships are *damp* ships. We are told that water is the very means of communicating cholera. We know in the Navy that water has had a great deal to do with the spread of tubercles. It used to be the disease that prevailed in our service, and the medical officers of the Navy for thirty years were fighting wet decks, and the last few years there has been *no such things as wet decks on board ship*. If the atmosphere can support and transmit this aqueous vapor and with it the tubercle germ, is it not possible that the same atmosphere can transmit that aqueous vapor and with it the cholera germ? I do not know whether DR. STERNBERG will agree with me in that. Certainly I think if that aqueous vapor gets into the mouth in any way, it will be carried down to the stomach. Imperfect sanitation is worse than no sanitation. Fumigation is as unfortunate a word as quarantine. I abominate the word quarantine, because it carries with it the idea of forty days' detention, and that I do not approve of; it would be better to call it sanitary non-intercourse. Fumigation is worse than quarantine, because if you fumigate you burn something and you think you are perfectly safe. A friend told me he was in a house during a fumigation, and as he did not feel inclined to move he stayed there, and sat in the room and read a paper during all the time of the fumigation. There is a report in the papers of a ship which was fumigated, and after it was all over they found an old hen still sitting on her nest; and still another case where a cat was discovered, having gone through the fumigation without being disturbed. Now processes of that sort are worse than none at all, in that they give a feeling of protection when it does not exist."

The lesson from all this graphic delineation seems to be the life-imperiling rapacity of commerce. It is not cholera, in every instance, that the medical watch-dogs of every nation are called upon to repel; nearly every communicable disease in the calendar takes its turn, through maritime channels, in endangering the public health. And it is the recklessness of money-getting, called commerce, that imports to us and to others nearly all these undesirable elements. When one of these immigrant ships lays at anchor and has not yet been "cleared," no one cares to approach it save from the windward. The steerage of some of these vessels is really insusceptible of "cleaning," and yet commerce rebels immediately if the routine operations of fumigation and the like are carried out to the letter. The steamship companies show their defects of management and policy most plainly during times of epidemic, but they are at all times a nuisance; they always stand ready to evade regulations, and to be a law unto themselves, and to cry out against sanitary precautions as being injurious to commercial interests. The influence of medical men may now be exerted in a timely way by showing that the further importation of the dregs and offscourings of Europe and Asia should at once be prohibited by law.

DR. A. N. BELL, editor of the *Sanitarian*, took part in the same discussion concerning cholera, and he took the ground that a board of health is just as necessary to a nation as it is to a city, and that therefore any national efforts against cholera without the support of a National Board are the reverse of useful. He said: "The occurrence of cholera without a National Board of Health of some kind is no exception whatever to a national government without a board of health always doing harm and obstructing the health service. I look upon the action thus far taken as attempting to do that. I have entertained these opinions a long time and I may, I hope, be excused for the emphasis with which I state them, that commerce has been at conflict with the health administration of our Government, with the exception of a few years when we had a Government Board of Health, and it then did something to protect us. National interference, or State interference, or city or municipal interference, without an effective Board of Health, is ineffectual, aggravates and alarms public sentiment and creates undue excitement."

HILL DIARRHŒA.

Hill diarrhœa is a peculiar form of trouble quite common in the hill countries of India, and probably also found in other hilly localities. An interesting account of the disorder is given by SURGEON LIEUT.-COL. CROMBIE in the *Indian Medical Gazette*.

The disease occurs at elevations of 6000 ft. or more above sea level.

"The peculiarities of this diarrhœa are—that in recent cases it is confined to one particular portion of the day, beginning between 3 and 5 o'clock in the morning, and lasting until 11 A.M. During the remainder of the day the patients are well and free to do whatever they like, without fear of any inconvenience from their malady; but the following day, at or about the same time, the diarrhœa recurs and stops again at the same hour. The motions are peculiar, they are liquid and frothy, very light in color, and having the general appearance of whitewash. They are accompanied by much flatulence, but usually without pain. It is a disease of adults; children under twelve years very rarely suffering."

An allied variety of hill trouble is a form of dyspepsia, characterized by gastro-intestinal flatulence. One case reported by CROMBIE, after becoming acclimated to altitude of 6000 ft. went to a place 2000 ft. higher, and had a recurrence of the old trouble.

The monsoons seem to be important factors in the extension of the disease. "As soon as the valleys begin to fill with clouds, and before the rains set in, characteristic cases of diarrhœa begin to apply for help, but it is not until July and August that it becomes epidemic; with the cessation of the rains in September the epidemic cases come to an end."

The disease seems to be independent of the purity or impurity of the water supply, as indeed the almost total exemption of children would alone indicate.

It is very evident that the liver is at fault, but it is quite certain that deficiency of biliary secretion is not the only trouble. CROMBIE is of opinion that the functions of the stomach, pancreas, and intestine are likewise in abeyance, and that the disease is essentially an indigestion.

"Elevation being the principal cause of the disease, all that is necessary for the cure, is a return to a lower level. In early cases this alone is sufficient to put a stop to the whole symptoms within 24 hours."

It is not less curious to note that occasionally, patients so cured can return to the hills without a recurrence of their trouble. Leaving the hills is particularly desirable during the monsoon influences.

For many reasons, many cases can not or do not take advantage of these simple means, and recourse must be had to medicinal treatment. Upon this topic CROMBIE says: "This consists in supplying the deficiency in the secretion of the normal gastric and intestinal ferments, as well as in the administration of intestinal antiseptics to check the abnormal fermentation which the absence of the bile and other secretions permits in the small intestine, and I am more certain of the value of pepsin, ingluvine, etc., in the treatment of the dyspepsia of the hills, than I am of almost any prescription for any disease with which I am acquainted."

The pepsin is best administered as peptonized milk, which in obstinate cases should constitute the sole diet, but in many cases the administration of 10 to 12 grains of pepsin two hours after food is sufficient to relieve all symptoms. Bichloride of mercury is best given 10 or 15 minutes before meals. Even in severe cases this plan of treatment is sufficient to reduce the diarrhœa to one pultaceous stool daily. Unfortunately the treatment fails in some cases, and then resort is had to the mineral acids and euonymin.

Among the more striking cases reported by the author is that of a lady who was troubled for four consecutive rainy seasons, and who one year had the disease all through the cold weather. The next year the disease returned as usual, but after five doses of ingluvine stopped entirely except for one day. Two girls of 14 and 15, were each cured by three 10 gr. doses of pepsin, and a boy of 3 years was cured by a single 5 gr. dose of the same substance.

We are not aware whether anything analogous to this curious complaint exists in the United States.

COMPENSATION AND COMPENSATORY HYPERTROPHY.

A study of the principles of DARWINISM would certainly lead one to expect some compensation for the entire loss or partial removal of any structure. As the presence of each structure depends upon necessity and as the loss of a structure implies absence of function, the demand for that function would require that it be replaced either through changes in similar structures remaining or in entirely diverse tissues. This compensation may be analyzed into these varieties: 1. Sufficient similar tissue still remains in the organism; there simply being increase in functional activity. 2. Numerical increase in the tissue elements remaining. 3. Volumetric increase of the remaining elements. 4. Production of similar tissue in other structures. 5. Assumption of the function by some entirely foreign structure. Of these divisions only the second and third permit of analysis as compensatory hypertrophy the others being purely compensations. It is then apparent that upon partial removal of a structure there may either be a functional or structural change in the remaining portion. That the first is possible may be concluded when the alternating activity between organs that are in pairs is recalled. Rosenstein demonstrated an alternating activity between the two kidneys, proof that there is more secreting structure than is absolutely necessary to fulfill the function. No doubt this is a provision of nature dependent upon the severe strain occasionally placed upon these organs. Again Rosenstein and Hamilton prove that all of the function is assumed by one kidney upon removal of its fellow, and that, although there is volumetric enlargement of the organ, there is no hypertrophy, as the increased size is due to dilatation of the blood vessels and lymphatics.

Upon the other hand pure compensatory hypertrophy has been frequently demonstrated. More especially in regard to the mamma, testicle and muscular fiber. Ponfick shows actual hypertrophy of the liver tissue remaining in dogs after partial removal of that organ. To these must be added the very apparent hypertrophy of blood vessels in collateral circulation and of connective tissue in cases of tenotomy and other operations upon muscles and fasciæ.

Compensation through the formation of new tissue has been recorded several times. Tizzoni asserts that new splenic structures are formed in the omentum of dogs and horses after extirpation of the spleen. Eternod also asserts that splenic tissue appears as a compensatory structure in the Peyer's patches in the intestines of rabbits. Compensation through the agency of other structures is seen in the enlarged heart muscle during valvular disease, and in the secretory relation existing between the skin and kidneys (Laube). Schottin even having found crystallized urea upon the skin in cases of uræmia.

More recently Hassler ("Ueber Compensatorische hypertrophy der Lunge," Virch. Arch., Band 128, Heft 3) proposes to demonstrate compensatory hypertrophy of the lungs. This possibility has already been pointed out by Ratjen, Schuchart, Grawitz and Birch-Hirschfeld. To these is added Meckel's observation of a number of cases in which there was absence of one lung and a marked increase in the size of the remaining organ (J. F. Meckel's Handbuch der Path. Anatomie). The experiments included operations upon twenty-six rabbits and five dogs. One lung was extirpated and the animals killed and examined at various periods from ten weeks to eighteen months after the operation. In only one instance could any hypertrophy be demonstrated. A young dog was examined six months after pneumoneclomy; both sides of the chest were alike and upon opening the cavity it was found that the right lung almost completely filled both sides of the thorax. Microscopical examination was entirely negative. In the other cases the remaining lung remained normal, was not emphyematous and occupied its original position.

The loss of an entire lung is certainly severe enough to demand that some decided reconstructive or functionating change take place. As the examination of the animals disproved anything structural the possibility of a functional change immediately offers itself as a solution. Hassler does not consider the question and makes no observations upon the respirations. But, reasoning from the arguments previously adduced and adding the clinical evidence of functional compensation in cases of pneumothorax, empyema and pneumonia, it is highly probable that in this particular instance the compensation was attained through an increase in the number of respirations. Moreover, this is not adverse to the analysis and the facts easily assume their proper place. A study of compensatory hypertrophy alone is incomplete as it might be expected for each organ and when it cannot be demonstrated the law of demand and supply would seem to be broken.

DISINFECTION BY THE NEW YORK BOARD OF HEALTH.

In the issue of Sept. 17, The Journal censured the disinfecting directions of the New York Board of Health as absolutely inefficient. In reply the board sent a new circular dated Sept. 5, and added the statement, that the circular criticised was published originally years ago and republished without authorization by the N. Y. City Health Department.

The new directions prepared by Dr. H. M. Biggs are above all criticism, and display a thoroughness revealing a practical bacteriologist. The blame for advocating antiquated disinfection methods which do not disinfect, rests hence no longer with the New York Board, but with the paper that published them, without comment, viz., the *N. Y. Med. Record*. Our contemporary evidently recognizes its liability and in its issue of Sept. 24, endorses the comments made by The Journal.

BOOK REVIEWS.

A TREATISE ON HYGIENE AND PUBLIC HEALTH. Edited by THOMAS STEVENSON, M.D., and SHIRLEY F. MURPHY. Vol. I. Philadelphia: P. Blakiston, Son & Co. 1892. Price $7.50.

Never was a book more seasonable than this. The attention of sanitarians and government officials is directed, as never before to the subject of hygienic living and to sanitary conditions, so that there is a grasping for just such books as this. The editor of this work was fortunate in securing the coöperation of the best known writers on the various subjects treated of in the several chapters and sections, so that we have chapters on Air by Prof. J. Lane Notter, of the Army Medical School at Netley. Warming and Ventilation by Prof. W. N. Shaw, of the University of Cambridge; Meteorology. by G. J. Symons. The Influence of Climate on Health, by C. T. Williams; Water, by Thomas Stevenson; The Influence of Soil on Health, by S. M. Copeman; Food, by S. H. C. Martin; Inspection of Meat, by E. W. Hope; Clothing, by Geo. V. Poore; Physical Education, by Frederick Treves; Baths, by W. Hale White; The Dwelling, by P. Gordon Smith and Keith D. Young; Hospital Hygiene, by H. G. House; The Disposal of Refuse, by W. H. Corfield and Louis C. Parkes; Offensive and Noxious Businesses, by Thomas Whiteside Hine; Slaughter Houses, by E. W. Hope.

Every chapter is a text for an important theme, and should have the practical attention of every health board and of every physician. The receipt of Volume II is awaited with much interest.

A HAND-BOOK OF HYGIENE AND SANITARY SCIENCE. By GEORGE WILSON, M.D. Seventh edition. Philadelphia: P. Blakiston, Son & Co. 1892.

This is a fitting companion to the more elaborate work of Dr. Stevenson above noticed. The estimation in which it is held is well attested by the rapid exhaustion of six previous editions, which have as they appeared, received our favorable attention. We find in this issue that the author has been awake to the advances made in our knowledge of bacteriology, and has greatly improved the chapters on Food, Water Supply, Removal of Excreta and House Refuse, Purification of Sewage, Communicable Diseases, Prevention and Disinfection, Sanitary Laws and Official Duties of Health Officers.

A BRIEF BIOGRAPHICAL SKETCH OF THE MEDICAL PROFESSION OF INDIANA COUNTY, PENN. By WM. ANDERSON, M.D., of Indiana, Penn.

This is an interesting little volume, the like of which might be written with profit in very many other localities.

MEDICAL COMMUNICATIONS OF THE MASSACHUSETTS MEDICAL SOCIETY. Vol. 15, No. 3. 1892. Boston: Printed for the Society by David Clapp & Son. 1892.

This volume contains the record of the Society's proceeding in June, 1892, inclusive of an indexing of three years' publications. It is last of the triennial pamphlets which constitute Vol. 15, 840 pages in all.

The scientific work of the year largely pertains to questions of State Medicine and the Public Health. The annual discurse is by the well-known sanitarist, Dr. Frank W. Draper, on the "Medical Profession and the Commonwealth." In this paper we find an unanswerable plea for the divorcement of practical politics from all departments that have to do with health or education.

The Shattuck Lecture this year is by Dr. J. F. A. Adams of Pittsfield, who treats of the "Prevention of Disease in Massachusetts;" this is a brief summary of the practical effects of sanitatation in that State in the last four of five decades. An instructive discussion follows on trichinosis, led by Dr. F. H. Drew, who describes an outbreak of that disease in Coleraine. We find also a paper by Dr. S. W. Abbott, of the State Board of Health, on the desirability of a revision of the classification and nomenclature of disease hitherto employed in the vital statistical tabulations of older American cities and States. "Epidemic Disease, inclusive of Influenza," is the subject of papers by Drs. Henry Jackson, W. E. Fay and P. C. Knapp. "Acute Intestinal Obstruction" was discussed by Drs. Homans, Shattuck, Irish, Warren and Cabot. In the course of Dr. Warren's remarks the following explanation, novel to this writer, of the alleged comparative infrequency of volvulus in this country as compared, for example with Russia: "It is a curious fact, mentioned by Koenig, that this affection is more frequent in some countries, as for instance Russia, where the length of the small intestine, owing perhaps to the peculiar vegetable diet, is said to be much greater than that of men of other nations." The treatment of compound fractures by Drs. Burrill and Dwight is the subject of the most important surgical paper in this volume.

MISCELLANY.

TRI-STATE MEDICAL SOCIETY.—Regular annual session will convene at Kahoka, Mo., Tuesday, October 4, 1892.

1. Uterine Fibroids and their Treatment, J. H. Beucler, M.D., Revere, Mo.
2. Dietetic Treatment of Dyspepsia, J. R. Hollowbush, M.D., Warsaw, Ill.
3. Sanitary Science *vs.* Epidemics, Geo. P. Neal, M.D., Ft. Madison, Ia.
4. Thaumaturgy in Medicine, J. M. Shaffer, M.D., Keokuk, Ia.
5. Intussusception, J. H. Coulter, M.D., Summitville, Ia.
6. A Case of Purulent Pleurisy, H. C. Young, M.D., Bloomfield, Ia.
7. Professional Secrets, W. R. Allison, M.D., Good Hope, Ill.
8. The Physician and his Compensation, O. F. Pile, M.D., Memphis, Mo.
9. Variations of Gestation, T. C. Hays, M.D., Vincennes, Ia.
10. The Hæmatozoan of Malaria, J. Fred. Clarke, M.D., Fairfield, Ia.
11. Operative Treatment of Intra-cranial Lesions, C. E. Ruth, M.D., Muscatine, Ia.
12. Obstetric Reflections, Calvin Snook, M.D., Fairfield, Ia.
13. The Physician as an Educator, W. V. English, M.D., Keokuk, Ia.

MEETING OF INTERNATIONAL MEDICAL CONGRESS (American Public Health Association), in the City of Mexico, November 29th and 30th and December 1st and 2nd, 1892. For the convenience of delegates, and all physicians with their families, who desire to attend this meeting, an elegant Pullman car will leave Chicago November 19th. Short stops will be made at all points of interest between Chicago and the City of Mexico. For further information, maps, time tables, etc., address John E. Ennis, D. P. A., Mo. Pac. Ry., 193 Clark street, Chicago, Ill.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending September 24, 1892.

Surgeon H. P. Harvey, detached from the "St. Louis," and granted six months' sick leave.

P. A. Surgeon H. N. T. Harris, detached from Navy Yard, League Island, and to receiving ship "St. Louis"

P. A. Surgeon C. F. Stokes, ordered to Naval Hospital, Yokohama, Japan.

P. A. Surgeon A. C. H. Russell, detached from Naval Hospital, Yokohama, Japan, and ordered to return home.

The Journal of the American Medical Association

VOL. XIX. CHICAGO, OCTOBER 8, 1892. No. 15.

ORIGINAL ARTICLES.

A CASE OF SYRINGOMYELIA.

Read by Title in the Section of Neurology and Medical Jurisprudence, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY WILLIAM C. KRAUSS, M.D.,
OF BUFFALO, N. Y.

Upon the invitation of your Secretary to read a paper before this Section, the thought occurred to me, to report a case of a disease as yet seldom met with in America, although its symptomatology, pathology and diagnosis seem to be well established. To convince one that syringomyelia is more prevalent in Europe than in America, one need but glance at the literature collected by Bloc or that of Buhl, or even that of Baümler, and compare the American with the European references. The cases reported by American authors, as far as I can learn, are those of Starr, Upson, Van Giesen, Booth, Jeffries, Wehlan, Shaw, Church, Hawley.

Whether this disease is actually as uncommon as reports seem to indicate, or whether it has been overlooked and placed in the category of those affections which it so closely resembles, is a question to be solved in the future. To be sure its symptomatology is so intimately allied with progressive muscular atrophy, the first stages of amyotrophic lateral sclerosis, Morvan's disease, anæsthetic leprosy, some forms of hysteria, etc., that a most thorough examination is necessary before it can be detected. On the other hand, whereas all symptoms may point toward syringomyelia, yet cases are on record where the autopsy revealed an altogether different lesion. It is therefore rather a difficult affection to diagnose, and once diagnosed, it is still more difficult to have the diagnosis verified or certified to by the pathologist.

It is not my intention to enter into a careful review of the symptomatology and pathology of syringomyelia, for I trust you are all acquainted with these facts.[1] I only wish to report a case, and the manner in which I arrived at my diagnosis.

Name, D. J. M.; age 30 years; height 5 ft. 7½ in.; weight 140 lbs.; complexion dark; constitution, large, robust, well developed; habits steady, regular, avoiding all excesses.

Antecedents.—His grandparents died of old age. His father died of cancer of the stomach, aged 52. His mother, still living, enjoys good health. He has four brothers and one sister living and likewise healthy.

Early History.—He passed through infancy and adolescence without any serious difficulty save an attack of syphilis which he contracted when 19 years old. Slight secondary symptoms appeared, which under antisyphilitic treatment disappeared without any later manifestations. At school he was bright and intelligent, interested himself in sports, was considered in strength and agility the peer of his comrades. When 20 years old, then living in Chicago, he went on the lakes as wheelman. Shortly thereafter he took to railroading, serving in various capacities as brakeman, fireman, engineer, etc. In 1886, he passed through a severe attack of rheumatism, all joints of the body being implicated. For six months he was unable to do any work. The following year, while working, he received an injury to the index and middle fingers of the right hand. In December, 1888, he was compelled to stay on his engine fifty consecutive hours. Completely exhausted he left for home, and for several days was unable to leave his bed on account of severe headache and dull aching pains along the spine. On resuming work some time afterward, he found that his strength was failing him, his arms would give out quickly, and he noticed that he could touch the hot parts of his engine without experiencing any pain. On several occasions his hands became blistered by coming in contact with the hot iron, and yet he was totally ignorant of when and where the burns were received. Soon thereafter he was compelled to stop work; his arms and hands were wasting rapidly, the muscles of the shoulders were in constant twitching, and his gait was becoming labored and unsteady. In August, 1891, after having consulted several physicians who pronounced his case rheumatism, paralysis, wasting of the muscles, etc., he decided to come to Buffalo for treatment.

Status Præsens.—I noticed nothing striking about his gait or carriage, except that he walked rather cautiously, and tried to favor his right hand as much as possible.

Psyche.—His mind was free and active, he talked intelligently on all subjects under discussion, and appeared to be very hopeful regarding the outcome of his disease.

Motility. Head and Neck.—The muscles are well developed and perform their various functions without any disturbance. The movements of the eyeballs are free, unrestricted, the iris reacts to light and accommodation. The tongue shows no deviation on protrusion.

Arms.—The right arm is perceptibly weakened so that the patient has little use of it. He is barely able to flex the forearm or to extend, pronate or supinate the hand. Flexion and extension of the fingers can be accomplished, but he is unable to pick up small objects or to button his clothes with this hand. The muscles about the shoulder joint are also weakened, and on removing his hat he is obliged to lower the head to the level of his waist. The little motion which he possesses over the shoulder comes from the levator anguli scapulæ and trapezius. The left arm is less affected than the right, although it is far from possessing the normal strength. With this arm he is still able to dress himself and attend to his wants, but he complains of its growing gradually weaker. August 1, 1891, the dynamometer gave right hand 42, left hand 48. Three days later, after the use of electricity, right, 48, left, 50. December 1, 1891, right 35, left 40. March 1, 1892, right 20, left 30.

Atrophy.—The supra- and infraspinati, deltoids, muscles of the arm and forearm are markedly atrophied; the interossei, thenar and hypothenar muscles are wasted to a slight degree. The right arm being the weaker, is naturally more affected than the left. Measurements made Aug. 1, 1891, show the size of the right and left arms respectively.

Left Upper Arm. Circumference.	Distance from Acromion.	Right Upper Arm. Circumference.
9⅛ in.	4½ in.	9½ in.
8⅞ "	7½ "	8½ "
8⅞ "	9½ "	8¼ "
Forearm	External Condyle	Forearm
9¼ in.	3 in.	8⅞ in.
8⅜ "	6 "	7¾ "
6⅞ "	10 "	6⅝ "
Hand, 8½ in.	Tip of median finger, 42 in.	Hand, 8⅛ in.

Circumference of chest, 9 in.; cephalad of the umbilicus, 32½ in.

December 1, 1891, another series of measurements were made:

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[1] For a thorough study of the symptoms of syringomyelia, I would refer you to Prof. Rump's paper in Neurologisches Centralblatt, 1889, pp. 185, 222 and 257. For a careful, painstaking microscopical examination of the diseased cord, see Van Gieson's paper in the Journal of Nervous and Mental Disease, loc. cit.

Left Upper Arm. Circumference.	Distance from Acromion.	Right Upper Arm. Circumference.
9½ in.	42 in.	9¼ in.
8¾ "	72 "	8⅝ "
8⅜ "	92 "	8⅝ "
Forearm	External Condyle	Forearm
9 in.	3 in.	8¾ in.
7⅞ "	6 "	7⅝ "
6⅝ "	10 "	6¾ "
Hand, 8¼ in.	Tip of middle finger, 42 in.	Hand, 8¼ in.

Circumference of chest, 9 in.; cephalad of the umbilicus, 32½ in.

Another series of measurements was made March 1, 1892, with the following results:

Left Upper Arm. Circumference.	Distance from Acromion.	Right Upper Arm. Circumference.
8⅞ in.	42 in.	8¾ in.
8⅛ "	72 "	8 "
8 "	92 "	7⅞ "
Forearm	From Ext. Condyle	Forearm
8 in.	3 in.	7⅞ in.
6⅞ "	6 "	6¾ "
6 "	10 "	5⅞ "
Hand, 8 in.	Tip of middle finger, 42 in.	Hand, 7⅞ in.

The electrical examinations made December 1, 1891, and March 1, 1892, show no qualitative changes whatever; the cathode closure contraction in every instance was short, sharp and quick. The only change was a quantitative one. The anode, 40 cm., was always placed over the sternum. The cathode employed was Stintzing's normal electrode (3 cm.). The readings were taken from a Hirschmann galvanometer.

Left Side.	Galvanic Current.	Right Side.
2 ma.	Radial nerve	2 ma.
1¾ "	Ulnar "	1½ "
3 "	Median " (elbow)	3⅛ "
2¾ "	" " (wrist)	2¾ "
2¼ "	Deltoid muscle	2¾ "
1 "	Biceps "	2⅜ "
1¼ "	Supinator longus	4 "
2½ "	Flexor corpi radialis	4 "
3 "	Flexor corpi ulnaris	3⅜ "
2¾ "	Flexor pollicis	3 "
3 "	Opponens pollicis	3½ "
3 "	Adductor pollicis	3½ "
3 "	Flexor minimi digiti	3¼ "
3 (?) "	Dorsal interossei	2 "

Left Side.	Faradic Current.	Right Side.
10.5 ma.	Radial nerve	10.6 ma.
10.6 "	Ulnar "	10.5 "
9.8 "	Median " (elbow)	10.5 "
9.5 "	" " (wrist)	9.6 "
9.4 "	Ulnar " "	9.4 "
	Deltoid muscle	
12.3 "	Biceps "	12. "
11.6 "	Supinator longus	10. "
8.8 "	Flexor corpi radialis	8.5 "
10.5 "	Flexor corpi ulnaris	10. "
9.3 "	Flexor pollicis	8.9 "
9.1 "	Opponens pollicis	9.6 "
9.2 "	Adductor pollicis	9.1 "
8.7 "	Flexor minimi digiti	9. "
8.7 "	Dorsal interossei	8.7 "

Through some inadvertence, the deltoid muscles were not examined. The cathode closure contraction in every case was greater than the anode closure contraction.

The examination made March 1, 1892, under exactly similar conditions, showed no particular change. I will only add here the results obtained with the galvanic current.

Left Side.		Right Side.
2¾ ma.	Radial nerve	1¾ ma.
1⅝ "	Ulnar "	1⅞ "
3½ "	Median " (elbow)	2 "
2¼ "	" " (wrist)	1¾ "
2 "	Ulnar " "	1¼ "
3⅛ "	Deltoid muscle	2 "
3½ "	Biceps "	2¼ "
4 "	Supinator longus	4 "
4 "	Flexor corpi radialis	2½ "
3½ "	Flexor corpi ulnaris	3 "
1½ "	Flexor pollicis	2½ "
3 "	Opponens pollicis	2½ "
2½ "	Adductor pollicis	3 "
3¼ "	Flexor minimi digiti	2¾ "
4 "	Dorsal interossei	3½ "

I did not make an electrical examination of the lower extremities, neither did I take any measurements.

Tendon Reflexes.—The biceps and triceps tendon reflexes, likewise those of the extensors and flexors of the hand, were absent. The patellar and Achilles tendon reflexes were markedly exaggerated. Ankle clonus was present on both sides. The superficial reflexes were abolished.

Fibrillation.—Fibrillary contractions were present at intervals, especially of the deltoids. It was almost impossible to make a correct reading of the electrical examination of these muscles on this account. The body and lower extremities presented nothing worthy of attention. The spine was erect, not painful, genital organs well developed, and the muscles of the leg hard and well developed.

Sensibility.—The general or tactile sensibility seemed to be unimpaired. With closed eyes the patient responded promptly whenever the skin was touched, whether by a camel's hair brush or a blunt metallic point. He was also able to distinguish between the two. The muscular sense was undisturbed. On seeing some recent scars upon the hands, I asked the patient whence they came, but he could not say. This led me to make a thorough examination of the thermal and pain senses, and suggested to me the *probable diagnosis of syringomyelia.* The sense of pain and temperature were diminished over certain areas of the body and extremities. Wherever thermo-anæsthesia existed, there also would be found partial or complete analgesia. The only region of the body where this did not hold true was on the back. On the right side, from the lower border of the scapula to the thigh, there existed analgesia with loss of the sense of heat, while on the left side there was analgesia with loss of the sense of cold. The dorsum of the right arm, left hand and left upper arm, central aspect of the thighs, right arm, left hand, upper arm and left half of the body from the umbilicus to the malar bone, presented analgesia and thermo-anæsthesia.

Trophic and Vaso-motor Disturbances.—The hands were cold and cyanosed, the skin roughened, presenting here and there a vesicular eruption. The circulation in the hands was sluggish and injuries healed very slowly, leaving large, prominent scars. The palms were continually moist, and this hyperdrosis seemed to affect the whole body, especially the face. The finger nails were thickened and extremely brittle, the hair covering the hands and arms long and dense.

There were no painful spots along the course of the various nerves—in fact, no subjective symptoms, save a slight numbness about the hands. To judge whether the hands were cold or warm, the patient would carry them to his forehead and judge by the sensation of the contact. The joints of the upper and lower extremities were free, painless and not enlarged. The thoracic and abdominal viscera offered nothing abnormal. The urine was generally acid in reaction, of light specific gravity, and contained neither albumen nor sugar.

Course.—The course of the disease was rapidly progressive. On first seeing him in August, 1891, he was able to use his left hand as he chose and could assist with his right. Gradually he lost strength in both hands, despite the use of massage, electricity, etc., so that in March, 1892, he could scarcely lift them. This story is perhaps best told by the dynamometer. In August, 1891, the right hand measured 42, left 48, while in March, 1892, the right measured 20, the left 30.

The eruption and vaso-motor disturbances of the hands yielded to the galvanic brush, and when I last saw him, his hands were in better condition in this respect than before. The sphincters gradually lost power, although the vesical and anal reflexes seemed to remain intact. The legs, although not appearing to waste, were growing weaker, the gait more spastic, and his general condition poorer, so that in a few weeks he will undoubtedly have to keep his bed. Upon the urgent request of his relatives he returned to his home, and nothing more has been heard from him.

If we can judge a disease by its symptoms, and the symptoms are but the outward manifestations of the disease, then the affection known as syringomyelia must be diagnosed by certain characteristic signs and symptoms. Comparing the symptoms of my patient with those mapped out by authors and investigators on this subject, I have no hesitation in pronouncing the case in question one of syringomyelia. The cardinal symptoms, as muscular atrophy, thermo-anæsthesia and analgesia, and such secondary symptoms as trophic disorders, scoliosis and the spastic-paretic gait, are all present save one, and that scoliosis. Blocq says that curvature of the spine is an almost constant symptom, and the majority of writers have found this to be the case. I see nothing in the pathology of syringomyelia that depends upon or calls forth a spinal deformity, hence do not regard it as a necessary adjunct in the symptomatology. Cases offering all of the cardinal symptoms and some of the secondary can scarcely be denied admission into this select circle—just because it lacks one of the minor points.

The diagnosis of syringomyelia can be made with a tolerable degree of accuracy if the patient can be thoroughly examined, and the differential diagnosis between and analogous clinical features constantly borne in mind. Diseases which have many points in common with syringomyelia are anæsthetic leprosy, Morvan's disease, multiple neuritis, hysteria, muscular atrophy and amyotrophic lateral sclerosis. Morvan's disease and anæsthetic leprosy are of such rare occurrence in America that the differential diagnosis need not be considered. Hysteria and multiple neuritis, as a rule, have very few symptoms which could be construed as syringomyelia; exceptional cases of hysteria might for a time simulate syringomyelia, but by close watching and careful examinations the counterfeit will be readily detected. The two affections which offer to the eye an aggregation of symptoms closely resembling syringomyelia are amyotrophic lateral sclerosis, especially in the early stages, and progressive muscular atrophy. The differential diagnosis of these three affections as I have met them, ignoring for the time the text-book descriptions, may be tabulated as follows:

	Muscular Atrophy.	Amyotrophic Lateral Sclerosis.	Syringomyelia.
Age	25-35	25-35	25-35.
Sex	Male	Male	Male.
Onset	Gradual	Gradual	Gradual.
Course	Progressive	Progressive	Progressive.
Muscular atrophy	Marked	Marked	Marked.
Tactile sensibility	Intact	Intact	Intact.
Sense of pain	Normal	Normal	Analgesia.
Temperature sense	Normal	Normal	Thermoanæsthesia.
Tendon reflexes	Diminished or absent.	Exaggerated	Exaggerated.

The similarity of these affections is striking, and in diagnosing a case of syringomyelia, the verdict will depend upon the stage of the examination, as progressive muscular atrophy, amyotrophic lateral sclerosis or syringomyelia.

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A CASE OF TRANSITORY MANIA WITH PECULIAR SEQUELÆ.

Read in the Section of Neurology and Medical Jurisprudence at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY G. R. TROWBRIDGE, A.M., M.D.,
Fellow o' the American Academy of Medicine; Member of the American Medical Association, and N. Y. Medico-Legal Society; 2nd Asst. Physician, State Hospital for the Insane, Danville, Pennsylvania.

The following case was one that proved of especial interest to me, for the reason that I was very much puzzled as to what conditions existed to cause such a sudden and peculiar attack and the consequent train of signs and symptoms. Whether or not my title is a misnomer I do not know, and at all events it is of little importance. I shall give as full and detailed an account of the case as possible for I intend to do nothing more, but leave the comments and diagnosis to others.

Mrs. K., female; aged 47 years; married and has six children. Admitted to this hospital February 17, 1892.

Physically is a short, slight woman, 5 ft. 2 in. in height; weight between 90 and 100 lbs; dark hair and eyes; very nervous temperament. Apparently has no organic disease. The history of the case before admission is as follows: About two weeks before coming to the hospital the patient retired at night feeling as well as usual, and slept quietly until about 3 o'clock in the morning, when she was awakened by a most intense pain in the lumbar region of the spinal column, which extended rapidly upward until it reached the base of the brain and then, as she described it, "it seemed to me as if my head was splitting into a thousand pieces, and that some terrible pressure on the inside was doing it." She had scarcely time to tell her husband to go quickly for a physician, before she sank into a condition of complete unconsciousness. This increased until the woman was in an almost comatose condition; pulse between 35 and 40, respiration slow and shallow; extremities cold and body covered with a profuse, cold perspiration. With proper treatment and care she regained consciousness, and was in fairly good condition physically though greatly prostrated by the attack. In a few days abnormal mental symptoms presented themselves and she developed a number of unsystematized delusions and moreover became almost unmanageable. She conceived the idea that the neighbors in returning from an evening company came to her house bringing mattrasses and bedding with them and slept all night on the floor of her bedroom. She also showed unmistakable homicidal tendencies toward her husband and nurse and moreover endeavored to set fire to the house by upsetting a lamp. Her bodily condition all this time was considerably impaired. Such is the history of the case before her admission to the hospital. She was brought here under the impression that she was going to procure a divorce from her husband, for ill-treatment. On my first examination I found her very weak, and unable to walk or even stand alone, and this inability I ascribed at first to her apparent bodily weakness. Bowels were sluggish; appetite poor; pulse weak and over a hundred. She was rather reticent at first and would talk very little. She was put on tonic treatment and nourishing diet. The bowels were kept free by enemata, as laxative and cathartic remedies were of no avail. This fact first attracted my attention when I learned that there was no evidence of special constipation or accumulation, but there was an utter lack of power to empty the rectum. I afterwards learned that this had been the condition since the night she was taken ill. There was no difficulty in urination. After a residence in the hospital of about five days she became more communicative, and told me considerable about her illness and *that she had been in the hospital five weeks*. She did not, however, mention her delusions. I made up my mind that her inability to walk alone was not due to bodily weakness but to a paralysis of the lower extremities due to some disturbance in the brain or cord. She complained of "cold feet," and yet there was no indication of this being so. The sensation was apparently normal and the patellar reflex was somewhat increased. At this time she showed a cross and irritable disposition, and though in our convalescent ward complained most bitterly of her surroundings, food, clothes, etc., etc., and of being "locked up with a lot of crazy people."

On the morning of March 15, 1892, I found my patient in bed, and she told me she had had another slight attack of the "same pain" she had the night she was first taken ill. She was considerably worried over it, fearing she would be "very ill and this time die." Seeing a good opportunity I asked her to tell me about the attack which she had had at home which she did very accurately, her story corresponding very closely with the history I have given, except she remembered nothing for several days after the attack, and her last remembrance of anything was requesting her husband to go for the doctor. In spite of this statement, however, she remembered her delusions when they were suggested to her, and though her enmity toward her husband had diminished somewhat, she still had the delusion in regard to the neighbors sleeping on the floor of her bed-room, though she did not remember this as developing until sometime after the attack. In other words, though she recovered consciousness soon after her attack, there is a blank of several days which she cannot account for, and yet her condition was one of only an apparent attack of acute mania, as during her excitement she did things which showed she was conscious of her surroundings. She improved considerably both physically and mentally, but at the time of her discharge still clung to her strange delusion regarding her neighbors. Her husband came for her at the time she was discharged and she showed no hostility toward him. I have heard since her discharge that she is improving rapidly as I expected, for at the time she left the hospital she was rapidly gaining the use of her limbs. Such is the case in full as far as I can give it and I shall leave it without diagnosis or comments, but I have regarded it as interesting for the following reasons:

1. The sudden advent of the attack.
2. The comatose condition following it.
3. The peculiar groundless but apparently fixed delusion.
4. The paralysis of the lower extremities and inability to evacuate the bowels.

Was there a lesion? If so, what was it, and where was it?

ADDRESS OF THE CHAIRMAN.—RESPONSIBILITY OF THE NATIONAL AND STATE GOVERNMENTS FOR THE PROTECTION OF THE PURITY OF THE WATER SUPPLIES.

Delivered before the Section of State Medicine at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY BENJAMIN LEE, M.D.,
OF PHILADELPHIA.

Before entering upon the consideration of the question announced as the subject of my address, to which I shall ask your attention for but a few moments, it seems fitting that a brief allusion should be made to the question of the re-organization of the parent asssociation of which this body is one of the members, in the interest of scientific work as contrasted with the transaction of routine business and the reading of essays on abstract subjects. No one who has attended the meetings of the Association with any degree of regularity for the past ten years can have failed to observe the growing importance of the Sections and the hold which they have on the interest of the members. To such an extent is this is true that a writer in the *American Lancet* has not hesitated to formulate the terse phrase "The Sections are the Association." If this be admitted the step is an easy one to the further assertion, "The Sections should control the Association." The chairman of the Section of Ophthalmology at the meeting of the last year devoted his address to indicating in what way the Sections *might* "control the Association," and courteously sent a copy of his address to the chairman of this and, it is presumed, of every other Section, if not to all the members of the Association. At the last meeting of this Section a committee of three was appointed to confer with similar committees to be appointed by the other Sections, to take up the whole subject of the development of the Sections. A place has been given in the program for the report of this committee and an opportunity will then be presented for full discussion of this important movement.

The proposal of the Chairman of the Ophthalmological Section would, as it seems to me, to a great extent do away with the Judicial Council as at present constituted, as also with the Nominating Committee, and place all the business now discharged by those bodies in the hands of a council composed of ex-chairmen of Sections for the three preceding years.

It is claimed that this plan would give the smaller Sections an equal representation in the general administration of the affairs of the Association with the larger Sections, and that the members of such a council would be thoroughly familiar with the needs and interests of the Sections. This would practically put an end to the system of geographical representation which has heretofore been warmly cherished by a large portion of the Association, and which they may feel loath to abandon. While seeing much in the scheme to approve, two objections occur to me which I feel are entitled to consideration. First, the work of the Judicial Council is often large in amount and exacting in character. The ex-chairmen of a Section are apt to be earnest workers in the Section and contributors to its program and discussions. If this labor is assigned to them, is it not possible that it may prove so engrossing as to take them away from the Section sessions, and thus diminish the interest of the latter? Secondly, eight out of the eleven Sections are composed of men who are more or less strictly specialists. Of course it is gratifying and instructive to them to meet those who are following the same lines of work, to become acquainted with them personally, to exchange ideas with them, and profit mutually by one another's experiences, efforts and discoveries. But, if only such as are thus bound together by ties of business interest, and it must be confessed after all that Section work has its business aspect to a very considerable degree, are to meet one another, listen to one another, talk to one another and eat and drink with one another, will not the effect be to increase the narrowness of the professional and intellectual horizon, which their daily routine necessarily involves, instead of broadening the view and widening the field of thought, as one would like to feel to be the result of annual association with the great minds of every branch of the profession. For this latter reason the proposal that each Section should have a stated social gathering of its own should not be too hastily adopted. The idea of having the procedings and papers of each Section reprinted from THE JOURNAL OF THE ASSOCIATION on fine paper with cloth binding would probably entail greater expense on each individual member in a small Section like ours than in a large one. It is, however, well worthy the attention of the members. And just here it may not be out of place to advert briefly to a disadvantage under which our Section labors. Nearly all its members are engaged in the active practice of medicine or surgery. The work which they do here and the time which they bestow, contribute in no way to their knowledge of the particular department of medical science or art to which they devote themselves and on which they depend for a livelihood. They know that in many other Sections papers are being read which would convey to them information of inestimable value, and discussions participated in by men to whom their ears are burning to listen. They are with us, therefore, at no trifling personal self-sacrifice. Hence, it can never be otherwise but that attendance on our sessions should be limited in members and fluctuating in character. Would it not be well to accept this fact and govern ourselves accordingly?

This thought has been in the minds of the officers in arranging the program of the present meeting, certain available periods having had no session assigned them, in order to allow the opportunity for attendance on these of other Sections.

GOVERNMENTAL RESPONSIBILITY FOR THE PROTECTION OF WATER SUPPLIES.

The question of the pollution of streams and other sources of water supply on this continent is rapidly assuming the greatest gravity. It is curious to notice how in this, as in moral and social problems, we are gradually making the discovery that America is after all not very different from the rest of the world, and that measures which have been found necessary in the older civilizations for the maintenance of public peace, the fostering of morality and the preservation of the public health, must also eventually be resorted to by us.

The first lesson which we learned on this question was that of the possibility of the pollution of wells, and a hard lesson it was, and still is, to drive into the head of the farmer or villager, who looks upon his well or spring or pump as a sacred legacy from his ancestors, hallowed by their use for generations, and to doubt the purity of which is to cast a reflection on the character of those who have gone before. The "old oaken bucket," notwithstanding the admirable parody on it by a well known sanitarian, still holds a place in the affections of the people which wins for it the plaudits of an enthusiastic public, wherever the "Old Homestead" is put upon the stage. This idol, however, is rapidly being shattered. Next in order we have been compelled to abandon our faith in the pure mountain stream that comes sparkling and dancing down the hill-sides. Plymouth gave the death blow to this article of belief, but it dies hard. Then the cherished doctrine of the self-purification of streams in the course of a flow of twelve miles was reluctantly abandoned. Finally a careful study of the statistics of our lake cities by Dr. Peter H. Bryce, Secretary of the Provincial Board of Health of Ontario, recently presented before the State Sanitary Convention of Pennsylvania as the Annual Address before the Board, shows conclusively that large bodies of fresh water, however pure by nature, cannot be depended upon to neutralize the germs of disease poured into them by large populations. All of these dis-illusions have in turn aroused public attention to the necessity of warding off the corresponding dangers, and have thus resulted in the formulation of legislative enactments of more or less wisdom and efficiency, generally more wise and efficient as their authors have profited by the experience of foreign countries in their construction.

In other words physical nature like human nature is the same all the world over, and it only requires the presence of the necessary amount of human nature sufficiently condensed to develop invariably certain conditions in physical nature which must be heeded. We are a great people and America is a great country, but even the great American eagle must bow in humility before the universal laws of nature. The problems which are now confronting us in consequence of our rapidly increasing population have forced themselves for many years on the attention of thoughtful minds in England and on the continent of Europe.

It would be then the utmost folly not to avail ourselves of the labor and thought which they have expended upon them. As is well known, the result of such study in Great Britain has led to the establishment of a body known as the "Rivers Conservancy Commission," whose duty is to investigate the reality and extent of this alleged evil of pollution of water supplies and to devise means for its remedy. I feel convinced that such a step is rapidly becoming a necessity in this country. To marshall statistics before this Section in order to convince its members that throughout the entire nation, in villages as well as in cities, thousands of avoidable deaths are taking place every year, in consequence of the pollution of public water-supplies, or that the ratio of comparative purity of water-supplies and comparative rate of mortality is almost a constant one, would, I feel, be a work of supererogation. I take that entirely for granted and do not anticipate the expression of a doubt on the subject. The questions naturally suggest themselves, then, "What are the several State governments doing to protect the purity of public water supplies?" and "To what extent are the State governments capable of preventing the pollution of streams, many of which traverse a large number of States?" This last question is to be considered on its moral as well as physical side. For, while a State government may in the abstract possess the power to prevent the contamination of a stream passing from its territory into that of another State, in the concrete it may find itself quite unable to refute the logic of those who are interested financially in maintaining contamination. I think it will be held to be sound law that no State has a right to pollute or poison a source of water-supply passing into another State any more than an individual has to pollute or poison his neighbor's well. If this be admitted, then, if State governments fail to appreciate their responsibilities in this particular, aggrieved States will have no resource but to petition Congress to enact such legislation as will take the matter out of the hands of the State governments and place it as a question of national hygiene, in those of the national government. In order to furnish data for the commencement of the investigation of this problem, I, some few months since, formulated a brief series of questions addressed to the Secretaries of State Boards of Health as follows:

Sec'y. State Board of Health of

. . . .

Dear Doctor:—Shall I be trespassing too much upon your valuable time, if I request brief replies to the following interrogatories?

1. Has your State any laws prohibiting the pollution of streams or other inland waters?
2. Has your Board adopted any Regulation upon this subject?
3. If either or both, kindly send me copies of the same if procurable.
4. Do any streams enter or traverse your State which have become seriously polluted in other States?
5. Do any streams which have become seriously polluted in your State enter or traverse other States?
6. In your opinion is it wise or politic to attempt to preserve the purity of streams, or should we not rather allow them to be used as sewers and seek our supplies of drinking water from other sources?
7. If you favor the former alternative, do you consider it expedient, in view of the fact that so many of our streams pass from one State into another to petition Congress for the passage of a law forbidding the pollution of streams throughout the entire country, and establishing a "Rivers Conservancy Commission" for the purpose of enforcing such law?

Awaiting a reply to the above inquiries, at your convenience,
Yours very respectfully,
Benjamin Lee,
Secretary State Board of Health of Penn.
1532 Pine St., Jan. 18, 1892.

An analysis of the replies kindly sent by the secretaries of twenty-three Boards gives the following results:

In reply to question No. 1. "Has your State any laws prohibiting the pollution of streams or other inland waters?"

The following named States and provinces possess general legislative enactments for the preservation of the purity of water supplies and streams or other collections of water: Kentucky, Delaware, Wisconsin, New York, Massachusetts, Minnesota, Maryland, West Virginia, New Jersey, Ontario, Quebec, Illinois, California. In all thirteen.

The following named State possesses special legislative enactments for protecting the purity of the water-supplies of certain cities only: Pennsylvania.

In the following named States and provinces the legislatures have made it the duty of the State Board of Health to protect the purity of the water supplies, and conferred upon them powers more or less complete for performing this duty: Delaware, New York, Ontario, Quebec, Minnesota, Massachusets. In all six.

The States of Minnesota and New York are those of the United States which have adopted what appear to me the most stringent and practical laws upon this subject, and time will not be lost in rehearsing their important features. That of Minnesota, founded on the original law of Massachusetts which has since been considerably modified, is as follows:

An act to prevent the Pollution of Rivers and Sources of Water Supply.—Chapter 225, Laws of 1885.

To be enacted by the Legislature of the State of Minnesota.

SECTION 1. No sewage, drainage or refuse or polluting matter of such kind as either by itself or in connection with other matter will corrupt or impair the quality of the water of any spring, well, pond, lake, stream or river for domestic use, or render it injurious to health, and no human or animal excrement shall be placed in or discharged into, or placed or deposited upon the ice of any pond, lake, stream or river, used as a source of water supply by any town, village or city; nor shall any such sewage, drainage, refuse or polluting matter or excrement be placed upon the banks of any such pond, lake, stream or river, within five miles above the point where such supply is taken, or into any feeders or the banks thereof, of any such pond, lake, stream or river.

SECTION 2. The State Board of Health shall have the general supervision of all springs, wells, ponds, lakes, streams or rivers used by any town, village or city as a source of water supply, with reference to their purity, together with the waters feeding the same, and shall examine the same from time to time and inquire what, if any, pollutions exist, and their causes. In case of the violation of any of the provisions of section one (1) of this act, said Board may appoint a time and place for hearing parties to be affected, and shall give due notice thereof, as hereinafter provided, to such parties, and after such hearing, if in its judgment the public health requires it, may order any person or corporation, or municipal corporation to desist from the acts causing such pollutions, or to cleanse or purify the polluting substance, in such a manner and to such a degree as shall be directed by said Board, before being cast or allowed to flow into the waters thereby polluted, or placed or deposited upon the ice or banks of any of the bodies of water in the first section of this act mentioned. Upon the application of the proper officers of any town, village or city, or of not less than legal voters of any such town, village or city, to said Board, alleging the pollution of water supply of any such town, village or city, by the violation of any of the provisions of this act, said Board shall investigate the alleged pollution, and shall appoint a time and place, when and where it will hear and examine the matter, and shall give notice of such hearing and examination to the complainant, and also to the person or corporation, or municipal corporation alleged to have caused such pollution, and such notice shall be served not less than ten (10) days prior to the time so appointed, and shall be served in the same manner that now is, or hereafter may be by law provided for the service of a summons in a civil action in the district court. Said Board, if in its judgment any of the provisions of this act have been violated, shall issue the order or orders already mentioned in this section.

SECTION 3. The district court, or the judge thereof, may, upon the complaint of said Board, or of the proper authorities of any town, city or village, whose sources of water supply shall be so polluted, issue an injunction to enforce the orders of said Board.

SECTION 4. Such orders of the State Board shall be served upon the persons, corporations or municipal corporations found to have violated any of the provisions of this act, and any party aggrieved thereby shall have the *right to appeal* to the district court of the county in which is situated the town, village or city, whose source of water supply is found to have been polluted, and such aggrieved party shall have the right to a trial by jury in the same manner as in a civil action in said court. During the pendency of the appeal, the pollution against which the order has been issued, shall not be continued contrary to the order of the State Board, and upon the violation of the order the appeal shall be forthwith dismissed.

SECTION 5. Any person, corporation or municipal corporation desiring to appeal from any such order of the State Board, shall, within thirty (30) days after the service upon him or it, of a copy of such order, file in the office of the clerk of the district court of the proper county, a notice of *such appeal, together with a bond in the sum of not less than* two thousand (2,000) dollars, with two (2) sureties, to be approved by the judge of said court, conditioned for the prosecution of such appeal to judgment, and for the payment of all the costs and disbursements that may be adjudged against him or it therein, and shall, within three (3) days after such filing, serve a copy of such notice and bond upon the Secretary of the Board; said Secretary shall within ten (10) days thereafter, deliver such copies so served *upon him to the Mayor or other chief executive officer of* any such city, village or town, whose source of water supply has been found to have been so polluted.

SECTION 6. Water boards, water commissioners, water companies and the proper officers of any city, village or town, making use as a source of water supply, of any well, spring, pond, lake, stream, river, reservoir or well, within, or partly within, this State, and distributing the waters thereof for public, domestic and general uses, shall, from time to time, and whenever required by said Board, make returns to said Board, upon blanks to be furnished by it, of such matters as may be required by said Board and called for by such blanks, and any such water board, water commissioners, water company, or officers of any city, village or town, who shall for the space of thirty (30) days after being furnished with such blanks, fail or neglect to make any such report so required, shall for each and every such neglect or failure, forfeit and pay the sum of one hundred (100) dollars, for the use of the local Board of Health, or the proper officers acting as such, of the city, town or village where such delinquent has its principal office. Said State Board shall, in the name of the State, prosecute in the district court of the proper county an action for the recovery of the penalty or forfeit therein imposed.

SECTION 7. This act shall take effect and be in force from and after its passage.

Approved March 7, 1885.

That of New York, while efficacious for the prevention of pollutions of a minor character, is hampered by a restriction in regard to the purification of sewage or alteration of systems of sewerage, which at first sight would seem to largely deprive it of value. It reads as follows:

An act to confer upon the State Board of Health power to protect from contamination, by suitable regulations, the water supplies of the State and their sources. Passed June 13, 1885; chapter 543, Laws of 1885.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. The State Board of Health is hereby authorized and empowered to make rules and regulations for protecting from contamination any and all public supplies of potable waters and their sources within this State. Provided, however, any such rule or regulation shall not be operative in any county until the county judge of that county shall approve the same.

SECTION 2. The said State Board of Health shall also have power, and it shall be its duty: 1. To publish once a week, for at least six consecutive weeks, all such rules and regulations as it shall have made concerning the contamination of any sub-soil waters, spring, streams, lakes, ponds, reservoirs, or other bodies of water contributing to the potable water supply of any municipality within this State, such publication to be made in one or more newspapers published in the county in which the waters affected by such regulations are located. The cost of publishing the regulations of the State Board of Health, as above provided, shall be paid by the corporation or municipality benefited by the protection of the water supply, concerning which the rules are made. 2. To impose penalties for the violation of, or the non-compliance with, their rules and regulations, not exceeding two hundred dollars in any one case.

SECTION 3. The officer or board having by law the management and control of the potable water supply of any municipality, in all cases where the said municipality derives its water supply in whole or in part from any subsoil water springs, streams, lakes, ponds, reservoirs, or other waters concerning which the State Board of Health shall make any rule or regulation, is hereby authorized and empowered to make such inspection of the sources of said water supply as said officer or board may deem advisable to secure the said water supply from any defilement, and to ascertain whether or not the rules and regulations made by the State Board of Health are complied with.

SECTION 4. In case such inspection shall disclose the violation by any person or persons of any of the rules or regulations of the said State Board of Health relating to the sources of said water supply, the officer or board mentioned in section three of this act shall serve or cause to be served a copy of the said rules and regulations, accompanied by a notice specifying the rule or regulation claimed to have been violated, upon the said person or persons violating such rules or regulations. If the person or persons so served do not immediately comply with the said regulation, the said officer or board having charge of the water supply of the municipality affected thereby shall notify the State Board of Health of the violation of its rules; the State Board of Health shall thereupon examine into the said violation, and if the party complained of is found to have actually violated any of the said regulations, the Secretary of the State Board of Health shall order the local board of health having jurisdiction thereof to convene and enforce obedience to the said regulation.

SECTION 5. In case any local board of health having jurisdiction thereof fails to enforce the order of the Secretary of the State Board of Health within ten days after the receipt of a notification so to do, as provided in the last section, the corporation furnishing the water supply, or the municipality deriving its water supply from the waters for the sanitary protection of which such rules have been made, is hereby authorized and empowered to maintain an action in a court of record and which shall be tried in the county in which the cause of action arose against the person or persons violating the said rules for recovery of the penalty therein provided.

SECTION 6. Every person who shall willfully violate or refuse to obey any rule or regulation made and published by the State Board of Health, and approved pursuant to the provisions of this act, shall be guilty of a misdemeanor, and on a conviction thereof shall be subject to a fine or imprisonment, or both, at the discretion of the court, such fine not to exceed three hundred dollars, nor such imprisonment six months. But the recovery of a penalty in a civil action, as provided in section five of this act and criminal prosecution and conviction under the provisions of this section, shall not be had for the same offense.

SECTION 7. When the State Board of Health shall, for the protection of a water supply from contamination, make regulations, the execution of which will require the providing of some public means of removal or purification of sewage, the **municipality or corporation owning the water-works benefited thereby shall, at its own expense, construct* and maintain such works or means for sewage disposal, as shall be approved by the State Board of Health.

SECTION 8. The State Board of Health, any local board of health, or any municipality or corporation furnishing water, may cause the affidavit of the printer, publisher, or proprietor of any newspaper publishing the rules and regulations as provided by the second section of this act, to be filed with such rules as published in the clerk's office of the county in which the municipality or corporation furnishing the water supply in any case may be situated or located, and such affidavit and rules, or duly certified copies thereof, shall be deemed conclusive evidence of due publication and of all the facts therein stated in all courts and in all proceedings or prosecutions under the provisions of this act.

SECTION 9. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

SECTION 10. This act shall take effect immediately.

An act to amend chapter five hundred and forty-three of the laws of eighteen hundred and eighty-five, entitled "An act to confer upon the State board of health power to protect from contamination, by suitable regulations, the water supplies of the State and their sources," relative to the construction of systems of sewerage, and works for the removal and disposal of sewage and the removal of buildings, and giving a right of action for damages.

Approved by the Governor June 2, 1890. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section seven of chapter five hundred and forty-three of the laws of eighteen hundred and eighty-five, entitled "An act to confer upon the State Board of Health, power to protect from contamination, by suitable regulations, the water supplies of the State and their sources," is hereby amended so as to read as follows:

SEC. 7. When the State Board of Health shall for the protection of a water supply from contamination, make regulations, the execution of which will require, or will make necessary, the construction and maintaining of any system of sewerage, or a change thereof, in any or for any village or hamlet, whether the same be incorporated or otherwise, or the execution of which will require the providing of some public means of removal or purification of sewage, the municipality or corporation owning the water works benefited thereby, shall, at its own expense, construct and maintain such system or systems of sewage, or change thereof, and also provide such means of removal and purification of sewage, and also such works or means for sewage disposal as shall be approved by the State Board of Health; and when the execution of any of the said regulations of the said State Board of Health will occasion or require the removal of any building or buildings, the municipality or corporation owning the water-works benefited thereby shall, at its own expense, remove said buildings and pay to the owner thereof all damages occasioned by such removal; and when the execution of any such regulation will injuriously affect any manufacturing or industrial enterprise which is not a public nuisance, the said municipality or corporation shall pay all damages occasioned by the enforcement thereof. And until such construction or change of such system or systems of sewage, and such works or means for sewage disposal, and the removal of any building, is so made by the said municipality or corporation owning the water-works to be benefited thereby, at its own expense, there shall be no action or proceeding taken against any person or corporation for the violation of any regulation of the State Board of Health under this act; and no person or corporation shall be considered to have violated or refused to obey any such rule or regulation. And the owner or owners of any building, the removal of which is occasioned or required or has been removed by any rule or regulation of the State Board of Health made under the provisions of this act, and all persons whose rights of property are injuriously affected by the enforcement of any such rule or regulation, shall have a right of action against the municipality or corporation owning the water-works benefited by the enforcement of such rule or regulation, for all damages occasioned or sustained by such removal and enforcement of the said rule or regulation or either; and an action therefor may be brought against such municipalty or corporation in any court of record in the county in which the premises or property affected is situated, and shall be tried therein.

SEC. 2. This act shall take effect immediately.

In reply to question No. 2. "Has your Board adopted any Regulation upon this subject?" In the following named States the State Board of Health has either by regulation, resolution or executive action attempted to protect the purity of inland waters: Massachusetts, Connecticut, West Virginia, New York, Delaware, Kentucky, Maryland, Wisconsin, Minnesota, Ontario, New Jersey, Illinois, California, Rhode Island, Province of Quebec, Pennsylvania. In all sixteen.

In reply to question No. 6. "Is it wise or politic to attempt to preserve the purity of streams, or should we not rather allow them to be used as sewers and seek our supplies of drinking water from other sources?"

The secretaries of the following named States pronounced unequivocally in favor of making every effort to prevent the pollution of streams and, as far as possible, to keep all impurities from entering them. viz.: Minnesota, Wisconsin, Vermont, Kentucky, Delaware, New York, Province of Ontario, Missouri, North Carolina, Maryland, Province of Quebec. In all eleven.

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*Italicized by the writer.

The secretaries of the following named Boards doubt the feasibility or possibility of preventing pollution to a very considerable extent, and therefore declare in favor of permitting streams to be used freely and unrestrictedly as sewers, and looking elsewhere for drinking water, viz.: Alabama, Florida, Louisiana, Oklahoma Territory, Rhode Island, South Carolina. In all six.

The secretaries of the following named State Boards considered that the question could not be answered categorically, but that each case of pollution or threatened pollution should be decided upon its merits as it arises: Massachusetts, California, Illinois, Connecticut, Michigan, West Virginia, New Jersey. In all seven.

In reply to question No. 7. "If you favor the former alternative, do you consider it expedient, in view of the fact that so many of our streams pass from one State into another, to petition Congress for the passage of a law forbidding the pollution of streams throughout the entire country, and establishing a Rivers Conservancy Commission for the purpose of enforcing such a law?"

The Secretaries of the following State Boards express themselves as in favor of National legislation forbidding the pollution of streams and establishing a Rivers Conservancy Commission for the purpose of enforcing such legislation: Louisiana, Delaware, Province of Ontario, Missouri, Maryland, South Carolina, Illinois, Connecticut, Michigan, West Virginia, Wisconsin, Vermont, Kentucky, Province of Quebec. In all fourteen.

Dr. N. D. Baker, of West Virginia, says: "I would join in earnestly urging the above action upon Congress."

Dr. F. W. Reilly, of Illinois, says: "The proposition to secure a Rivers Conservancy Commission, with power, authority and means to determine individual cases on the basis of individual conditions has my hearty endorsement."

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It will thus be seen that the consensus of opinion of practical sanitarians is strongly in favor of legislative interference for the protection of the purity of water-supplies and streams; that in several States such opinion has crystallized into a public sentiment of such force as to compel the unwilling acquiescence of legislators and lead to the passage of laws for the purpose; that as an ideal question all regard it favorably; but that, as a practical question, the varying conditions of the several States modify the opinions of those residing therein. In some instances the drainage problems of the country are such as to make it appear almost an impossibility to prevent the pollution of streams; in others the manufacturing interests are paramount to all other considerations; and in a third class, the country is so sparsely peopled and there is such an entire absence of manufacturing industries, that the question is not with them an urgent one. Wherever it has forced itself upon the attention of sanitarians, and the difficulties are not so great as to make them appear at first sight insurmountable, but one opinion has been entertained and expressed. This being the case, is it not desirable that this Section should formulate a request to Congress to appoint a committee to consider the expediency of the establishment of a "National Rivers Conservancy Commission," and transmit the same to the Association with a recommendation for its adoption?

In coming to a decision on this really momentous question, it is in the highest degree desirable that we should allow hygienic considerations and the interests of human life alone to have weight! Shall we permit local jealousies or inherited prejudices or questions of political organization to influence us? Are not thinking men who reside in large cities beginning to wake up to the fact that so far as municipal government is concerned we have been grasping at the shadow of liberty only to lose the substance? Shall we allow the bogy of centralization of power to deter us from advocating a measure which may prove the salvation of thousands of lives?

THE NEED OF NATIONAL LEGISLATION FOR THE PROTECTION OF HUMAN LIFE.

Read in the Section of State Medicine, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY A. N. BELL, A.M., M.D.,

OF BROOKLYN, N. Y.,

The need of national legislation for the protection of human life is based upon the knowledge of the transmissibility of epidemic diseases by commerce.

This need obtains to a larger degree for the United States than for any other country in the world, because while the States severally have many inherent rights and obligations of their own, and among those rights certainly that of self-protection against dangers to human life, the nation alone has the power to regulate commerce; and because, related to this commerce, the United States greatly exceeds any other country in the world as the collective centre of all nationalities and habits of life, more or less at variance with the conditions promotive of or in conflict with their own health or of the public health in this country.

Commerce, as hitherto conducted in the United States, in default of national legislation to prohibit the introduction of epidemic diseases has been and is in constant antagonism to the efforts of the States and their seaports to prevent their introduction. Hence, it may be truthfully asserted with regard to sanitary progress in this country, that it has not only been made for the most part without the aid of the general Government, but in actual contention against the Government practice in the contrary direction.

At the outset the general Government essayed to aid the seaports by providing hospitals for those sick with infectious diseases, and warehouses for infected merchandise, both of which commodities it has persistently supplied to the jeopardy of the public health and at great pecuniary cost to the people. It has fallen under my own observation that some such structures eventually became so dangerous that the people in their vicinity destroyed them; but some still exist at other seaports, memorials of the nation's efforts to coördinate the introduction of pestilential diseases with an unrestricted commerce in them. Fortunately, every State in the Union has the power to impose regulations for its own protection; and all—or as many of the States as may so agree—have the power to impose interstate regulations for mutual protection against the introduction and spread of epidemic diseases in their midst. Indeed, not only every State, but every municipality and corporate village or town, has similar power; and it has been in the exercise of such power by the corporate communities and the States severally, that, excepting the progress made in army and naval hygiene, and the work of the National Board of Health during its brief existence, all the progress in preventive medicine in this country has been made by the people in their own behalf against the fostering of disease by commerce. For this reason it is that there are not wanting some advocates of State and local sanitation exclusively as abundantly sufficient. And they would sustain the proposition by reference to the triumphs over preventable diseases by a large number of local boards of health throughout the country, particularly to the progress made under the auspices of the State Boards. Indeed, such advocates—looking at but one side of the question—might cite one of the most triumphant examples of sanitary progress on record to show the sufficiency of local effort alone when fully aroused.

It has been a favorite maxim with me for many years that progress in measures for the protection of human life primarily consists in exposing the consequences of their neglect. In 1864, six years before the first State Board of Health (that of Massachusetts in 1869) was established, I was privileged to belong to a voluntary association of citizens in New York,[1] whose members all appeared to me to be animated by the same sentiment—to seek out and publish the localizing causes of disease throughout the city. The report of the Association at the end of that year showed that, in an estimated population of 700,000, 495,592 persons lived in tenement-houses and cellars, with an average of seven and one-sixth families to each tenement-house, and that many took boarders besides. The tenement-houses of one of the most thickly populated districts contained from 10 to 50 families each. The *pro rata* of ground area to each occupant was less than 15 square feet, and the space in the apartments to each occupant less than 300 cubic feet. One half of the tenement-house population had less than 500 cubic feet of air space to each person. The filthy surroundings were loathsame in the extreme.

The total number of deaths reported for the year 1863 was 25,196—an increase of 3,952 upon the previous year; during the year 1864 there were several hundred more, and for the whole population a fraction less than one death annually to every 35 of the living.

For a period of 25 years, terminating at that time, the number of deaths reported by the City Inspector annually had fluctuated from one death to every 39 to one for every 27, and had even been as high as one to every 22¼ of the whole population; while among the most overcrowded tenement-house population it was one to every 19 of the living.

The outcome of that exposure was the establishment of the Metropolitan Board, in 1866. Under it and its subsequent modifications, cellar tenements have long since ceased to exist; the air space of the tenement-houses has been enlarged, by law, to not less than 600 cubic feet for each occupant; the death-rate of the city has been reduced to an average of about 24.5 per 1000 of the whole population; and for the tenement-house population—counting in the advantage gained by an improved class of tenement-houses—the mortality has been less than among the non-tenement class, due, doubtless, to the better surveillance of the tenement-houses by the Health Department. On the whole, a reduction of about 10 per 1000 of the population annually has been made in New York City since the establishment of the first scientific Board of Health there in 1866. The result since that time, as compared with a like period preceding the awakening of public attention and subsequent legislative action—brought about by the Citizens' Association—has been the saving of more than 500,000 human lives.

Again, the quarantine at the port of New York, aided (?) in the manner before indicated, and fed by commerce, had been, like the tenement-houses of the city, getting more and more deadly—proportional with patronage—until, in 1856, it reached a climacteric period.

The Health Officer's residence was at Tompkinsville, and the boarding place and anchorage in the Narrows, between Staten Island and the Long Island shore. In this narrow channel, from opposite the northern end of Staten Island, extending southward, and including Gravesend Bay, between Coney Island and Fort Hamilton, in the immediate trend of the prevailing southwest wind toward the Long Island shore, not more than 300 yards distant, there were anchored *at one time* during that summer over 200 infected vessels, chiefly with yellow-fever. That the disease should have been communicated to the people in such proximity on the Long Island shore is perfectly consistent with the nature of such a mass of infected material everywhere. Moreover, it was through the midst of this accumulation of infected commerce that all vessels to and from the port of New York, for the time, had to pass.

But it was a blessed epidemic. It roused the people round about to the assertion of their rights, for which they did not cease to contend until the quarantine, as it was at that time conducted, was destroyed, and subsequently, by Act of the Legislature nounced unequivocally in favor of making every effort to prevent the pollution of streams and, as far as possible, to keep all impurities from entering them. viz.: Minnesota, Wisconsin, Vermont, Kentucky, Delaware, New York, Province of Ontario, Missouri, North Carolina, Maryland, Province of Quebec. In all eleven.

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[1] Citizens' Association.

The secretaries of the following named Boards doubt the feasibility or possibility of preventing pollution to a very considerable extent, and therefore declare in favor of permitting streams to be used freely and unrestrictedly as sewers, and looking elsewhere for drinking water, viz.: Alabama, Florida, Louisiana, Oklahoma Territory, Rhode Island, South Carolina. In all six.

The secretaries of the following named State Boards considered that the question could not be answered categorically, but that each case of pollution or threatened pollution should be decided upon its merits as it arises: Massachusetts, California, Illinois, Connecticut, Michigan, West Virginia, New Jersey. In all seven.

In reply to question No. 7. "If you favor the former alternative, do you consider it expedient, in view of the fact that so many of our streams pass from one State into another, to petition Congress for the passage of a law forbidding the pollution of streams throughout the entire country, and establishing a Rivers Conservancy Commission for the purpose of enforcing such a law?"

The Secretaries of the following State Boards express themselves as in favor of National legislation forbidding the pollution of streams and establishing a Rivers Conservancy Commission for the purpose of enforcing such legislation: Louisiana, Delaware, Province of Ontario, Missouri, Maryland, South Carolina, Illinois, Connecticut, Michigan, West Virginia, Wisconsin, Vermont, Kentucky, Province of Quebec. In all fourteen.

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But it was a blessed epidemic. It roused the people round about to the assertion of their rights, for which they did not cease to contend until the quarantine, as it was at that time conducted, was destroyed, and subsequently, by Act of the Legislature supplanted by the most efficient quarantine establishment in the world.

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It would be an easy matter to cite other scarcely less signal triumphs of sanitation in the United States, independent of the several governments, equal to any that have taken place elsewhere during the now more than forty years since I have been not an wholly inactive observer. It is with knowledge limited to such progress in sanitation by the States and smaller communities that there are not wanting some men of influence wholly opposed to national legislation for the protection of human life. If the States and many populous communities severally have such power and have used it with such good results as those illustrated by the examples cited, they ask, In what consists the necessity for national legislation?

First, because there is too much independent power on the part of State and municipal officials, and, above all, of merchants and their ship masters, to do as they please, regardless of sanitary knowledge, or to ignore its importance when its exercise does not happen to harmonize with the political standard set up, or to chime in with money-getting propensities at the risk of the public health.

Of these, examples are by no means wanting. As one on a small scale, but exceedingly mischievous in its direction, the port of Perth Amboy, N. J., has been a thorn in the side of the New York quarantine and a menace to the health of the city ever since it became a port of entry. It claims the right—though not in so many words—and has frequently made attempts to exercise it (and not always ineffectually, there is reason to believe), to exercise its privilege as a port of entry for infected vessels whose masters desire to shun the New York quarantine, and issuing a new clearance to New York, under the privilege of being a healthful port and a pur-blind health officer to the condition of the vessel.

But dangerous as such powers are, independent of even State control, they are insignificant as compared with some officials in higher places who would sacrifice the health of the State and nation to the opportunity for embarrassing a political opponent.

Every sanitarian in the Union knows that we have not far to seek for a prominent example in justification of these remarks; that for several years preceding the arrival of cholera infected vessels at the port of New York in 1876 the quarantine establishment of New York had been allowed to decay and become notoriously deficient in means for the protection of the public health—in the face of universal intelligence that cholera was aboard—because the Governor of the State preferred to take the risk of a cholera epidemic rather than approve of legislative appropriations for preventive measures to be applied by those who differed with him in politics.

Unfortunately, this is not an isolated case, only in so far as it is the less excusable by reason of the prominence of the official and the consequently increased danger of a following. Indeed, this is already manifest by the action of his immediate successor, who has, for professedly economic reasons, just vetoed an appropriation for completing the repairs which his predecessor was driven to undertake by Mayor Hewitt and others of New York, when the amount asked for by the quarantine commissioners to complete the work would have increased the State tax *per capita* only the sixth of one cent. The functions of the Health Officer of the port of New York, as with that of every other port health officer in the United States, end with each case as it arises, while the recurrence of cases is continuous, a constant tax upon the port and the State, a menace to the public health, and an unmitigated burden to commerce.

Twenty-eight years ago, at the meeting of this Association, at Boston, in 1865, I submitted a brief paper on the Introduction of Disease by Commerce. We have learned a good deal about the etiology of some commercial diseases since that time, but nothing to gainsay the force of the illustration there given, particularly with regard to yellow-fever, which is a constant menace to the southern section of our country, or of the pertinence of other infectious diseases introduced by commerce.

But that paper was evidently premature. And for that reason, fortified as it now is by increased observation and more general knowledge on the subject, an abstract of it is deemed appropriate to this occasion, as follows:

> "Since yellow-fever appeared in the Brazils, about sixteen years ago" (it has now been forty-four), "it has extended over the entire Gulf of Mexico, the West Indies, and to most of the Southern States, and finally to the Pacific Coast. But all the while it has clung with tenacity to regions and localities remarkable for general resemblance—for the time being, at least—in local and climatological conditions.
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> "In 1851–52 the harbor of Rio Janeiro was crowded with infected vessels, many of them destined for the Pacific. How many of them arrived there still infected, and touched at places where yellow-fever soon after for the first time prevailed, we have no means of knowing. But a few have been traced.
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> "About the middle of the year 1851 the steamer *New World*, on her way to California, having touched at Callao after having lost almost her whole crew by yellow-fever in Rio. The steamer *Quito* also, during the same season, lost several of her crew there, proceeded to the Pacific, and arrived at Callao in April, 1852. Soon thereafter a mild form of fever broke out in Lima and along the coast of Peru, which the natives called 'pelusa,' just as in 1849 the precursory form of fever which prevailed in Rio was called 'polka.' The disease speedily developed into a perfect type of yellow-fever, and has become domiciled.
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> "June 6, 1865, the steamer *Ben Franklin* arrived at Norfolk, Va., from St. Thomas, where she had lain several months during the prevalence of yellow-fever, and had lost several of her crew with the disease, and had also lost two or three more with it on the voyage to Norfolk: but at the time of her arrival she had no one on board sick with it. On July 5, a man, who had been working on the boiler of the *Ben Franklin* two days before, was taken with yellow-fever, and died on the fourth day of the disease. This was the starting point of the fever, which subsequently prevailed so extensively at Portsmouth and Norfolk until the beginning of cold weather.
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> "Early in December, 1857, the U. S. Steamer *Susquehanna* arrived at San Juan de Nicaragua from the Mediterranean two months before, touching by the way at Genoa, Madeira and Key West. She remained at San Juan until the first of the following April, having had during the whole time she laid there a constantly increasing sick list of a precursory fever. At first intermittent, then remittent, but all recovering until March 20, when a case became malignant and died.
>
> "The ship put to sea April 1, and on the 5th arrived off Port Royal, Jamaica, with 106 officers and men down with yellow-fever. Most of these were sent to the hospital, and on the third day afterward the ship sailed for New York, where she arrived April 15, with 51 on the sick list."

The remarkable feature in the case of the *Susquehanna* was that, at San Juan, where the yellow-fever first broke out on board, there was no yellow-fever at that place, and the disease had never been known to occur there. Moreover, the *Susquehanna* had been more than two years on service in the Mediterranean without having had any extraordinary sickness on board when she was ordered to San Juan de Nicaragua; but she had had yellow-fever on board during her preceding cruise in the Gulf Squadron the summer before she was ordered to the Mediterranean, three years before. She was supposed to have been cleansed before she was so ordered; and owing to the unpredisposing conditions of the climate during the interval and while she remained on the Mediterranean station, to the revival of the yellow-fever infection, which, as the sequel shows, she still retained until she returned to the conditions of the yellow-fever habitat at the port of San Juan de Nicaragua.

It is contended by those who persist in their endeavors to elude every restriction upon commerce in disease by foul vessels, that there have been such improvements in ship architecture during recent years as to have well-nigh overcome such conditions as those cited. They would have us believe that because the modern iron ships and water ballast, which have taken the place of wood and stone, are more easily kept clean, they are less liable to infection than the ships of a past generation. But the continued and more certain propagation of epidemic diseases by commerce, and by emigrant ships particularly, is conclusive testimony against that contention. Indeed, admitting the improvements with regard to the passenger-carrying capacity of emigrant ships, such improvements are not infrequently found to be very decidedly in conflict with the health of the passengers, and no less dangerous to ports of arrival than were the passenger and traffic vessels of a past generation.

All sanitarians are more or less familiar with the conditions promotive of disease comprised within the tenement walls of brick vertically and longitudinally divided into compartments by hallways and partitions, pierced here and there with doors for ingress and egress, and provided with windows for light and some fresh air—by shaft or otherwise—from pavement to roof, though ever so much overcrowded. And in civilized communities everywhere the misery of people who, through poverty or other causes, occupy such unhealthful tenements, has never failed to excite public sympathy; insomuch, indeed, that in some communities, in Glasgow, for example, whole blocks of such tenements have been destroyed by national law[2] and healthful tenements substituted, with the result of reducing the death-rate among those who occupied them from 70 to 24 per 1,000.

But not so by any means with regard to the iron tenements afloat, with their several submerged floors and apartments—a basement twenty feet below the water level, with a filthy, stagnant sewer of bilge water beneath it, without a window for light or air nearer than thirty feet above the sewer, and no opening for egress or ingress except through the roof-deck, and this deck not infrequently converted into a pound for cattle. The intervening deck between the cattle pen and the steerage for emigrants is commonly divided into compartments for the mails and storage. The required air space in the steerage by law[3] is from 100 to 120 cubic feet per capita.

Below the steerage is the hold for cargo, dark and airless, except by the ekeage of the foul gases into it from the bilge, which contributes more or less foulness to the cargo according to the tightness or otherwise of the ship's lining between and the nature of cargo.

Surely it is no wonder that such tenements afloat, with no sanitary surveillance worthy of the name, should become the hatcheries of typhus-fever and other infectious and communicable diseases. The *Massilia*, by which typhus-fever was introduced into New York in January last, is an example.

Five years ago, at the meeting of this Association in Chicago, I made a report on "Medical and Sanitary Service on Board Immigrant Passenger Vessels," containing a computation of the death-rate of 27,157 emigrants who took passage to New York during the month of April, 1887. Forty-one died on the voyage—an annual rate of over 55 per 1,000, giving ten days as the average duration of the time the passengers were on board ship. The mortality was not particularly excessive for that month, and it is not believed to be in excess of the present rate.

It is the misfortune of the New York quarantine that no record of the history of infected vessels has been kept; the health officers seem to have regarded their records as personal property, and have taken them away with them. Indeed, in their published official reports even the names of infected vessels are rarely given except incidentally. The report for 1891 is an exception—at least with regard to emigrant ships. But gleaning such records as I have been able to obtain, covering the last five years, there is no difficulty in designating some of the emigrant ships as rounders with regard to their liability to infectious diseases, indicating a continuous state of receptivity. The *Alesia*, which brought cholera to quarantine in 1887, is an example. She brought small-pox twice in 1888, twice in 1890, and she has recently arrived with measles. There are several other repeaters within the same period, of two or three times each. And Dr. William M. Smith, who has occupied the post for nearly twelve years—recently relieved—informs me with regard to yellow-fever particularly, his recollection is that the disease was remarkably persistent year after year to certain vessels during the early years of his service. His report for 1889 contains this remarkable statement:

> The fact is worthy of special consideration, as illustrating the efficiency of the system adopted at this quarantine for an exclusion of yellow fever, that in no instance has the disease occurred among the passengers or crew of vessels from ports known to be infected ports; the cases that have arrived were from localities where the disease was not known to exist, and on vessels that carried clean bills of health.

It would be difficult to adduce clearer evidence than this of the persistence of ship infection and its danger, even when not directly from infected ports.

That such infected conditions of merchant vessels are no less common now than they were thirty years ago, it is only necessary to call attention to the outbreaks of yellow-fever continually occurring on board vessels in frequent communication with Rio, Santos, Guayaquil, and other yellow fever ports, in commercial intercourse with the seaports of the United States.

What is said with regard to the persistence of the yellow-fever infection in such vessels also applies to other infections and the recurring outbreaks of infectious disease on board emigrant ships—*they are not disinfected.*

My opinion, with regard to efficient disinfection and the means of applying it, is sufficiently well-known to require no repetition in this place. It will suffice to state that while *steam* is everywhere acknowledged to be the most efficient of all means, it is still, so far as I am informed, unused for the *disinfection of vessels at our quarantine stations.* At the New York establishment it has been used twice—first to the U. S. transport steamship *Delaware,* infected with yellow-fever in 1862; and second, to the emigrant steamship *Britannia,* infected with cholera in 1887—in both instances in accordance with my advice, and with complete success.

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[2] English Acts of Parliament, 1866-71.

[3] Acts of Congress, 1882 and 1887.

Moreover, from all I have been able to learn of common practice in the premises, no attempt is made to apply such disinfectants as are used to the bilge—the breeding place of infective germs—and but rarely the hold. The masters of infected emigrant ships have been *directed,* after permission to go to the wharves of the city and removing cargo, to disinfect the hold with sulphur or chlorine, and to wash with mercuric-bichloride solution; but I have not been able to find any one who has *seen* this done—even if it ever has been done. Is there any one who appreciates the by no means overwrought description I have attempted to give of a modern emigrant ship, who thinks that the dark and close recesses and crevices more or less common to all vessels, the special lurking places of disease germs, are ever penetrated by such means; or that the filthy paste composted by the motions of the ship, of the leakage at yellow-fever ports and bilge water with which the limbers of vessels are plastered from the keelson to the deck are ever reached by the bichloride or any other solution, or by any fumes evolved in the hold, without exposing the limbers?

But I am gratified at being able to state that Dr. Wm. T. Jenkins, the recently appointed Health Officer at the port of New York, promises the speedy application of steam to infected vessels, by which means, at a sufficient temperature to kill all disease germs without injury to the vessel, disinfection may be effectually accomplished.

While the recent laws of France and Germany against the importation of American pork obtained, no American ship laden with pork was cleared for those countries. Would it be a greater burden on France or Germany to prohibit the exportation of typhus or any other like dangerous disease thence to the United States than was the prohibition of pork from America? The solution of the question requires no argument, and it applies equally to all other countries.

The port health officers of the United States, and the Health officer of the port of New York in particular, with regard to emigrant ships, are our sole reliance; they are assumed to possess ample power for the prevention of the introduction of epidemic diseases from abroad. But so long as emigrant ships are permitted to receive passengers and their luggage without restriction; vessels known to be infected with cholera, or to have merchandise suspected of cholera infection, refused entry at English ports, but given "clean" bills of health to proceed to American ports; merchant ships to receive any sort of merchandise at the tropical ports of South America and the West Indies where yellow-fever obtains, and clear for American ports without credible bills of health—so long as any of these conditions obtain, and so long as there is no intelligent and reliable sanitary inspection at the *ports of departure,* and for *emigrant ships,* no competent sanitary supervision *during the voyage,* just so long will the people of the United States be subject to epidemics imported from abroad.

Every person acquainted with the construction of sea-going vessels, and with knowledge of the practices of those who command them, knows that it is often wholly impracticable, under the wilful deceptions that commonly obtain among the masters and medical officers of emigrant ships, and the clearance conditions of merchant vessels generally, for health officers to obtain reliable information with regard to infectious diseases at foreign ports; the sanitary condition of the vessels at the time of clearing; their previous condition—whether recently infected or not—or the nature of any diseases that may have occurred during the voyage. Indeed, the present state of conducting commerce in epidemic diseases. by which they are so carefully concealed by those who set more value upon dollars than upon human life, is such that it is frequently altogether impracticable for the port health officer to discover their hiding places.

The only way of meeting and overcoming these dangerous conditions to the health of the people is by efficient *international* regulations, and a necessary prelude to these is a *national health service*—a service such as that contemplated by the bill of Senator Harris for a National Board of Health, introduced in the Senate, December 10, 1891.

As compared with other proposed national legislation with the same object in view:

It provides for a competent *personnel* in the organization of the Board; the utilization of the consular service of the United States as means of information; the Naval and Marine Hospital services; coöperation with State and municipal authorities; voluntary public and private associations—in short, with all sources of information relating to climatic and other conditions affecting the public health. While it makes it unlawful for any merchant ship or vessel from any foreign port to clear for any port of the United States except under clearly defined regulations for the protection of the public health, it respects the right and obligations of foreign nations to practice sanitation at the ports of departure, and—with regard to emigrant ships particularly—during the voyage. It provides against such cases as the one cited—the action of the Health Officer of Perth Amboy against the quarantine regulations of New York. It offers aid to all sanitary authorities in the United States when required, to prevent the introduction, to seek out and destroy epidemic diseases and the conditions which promote them. There is no need of pursuing the excellent provisions of this bill in further detail. I prefer to take it for granted that every member of the Section has made himself familiar with it.

One important deficiency, however, is apparent. While it provides for and exacts practical sanitation by the rightful authorities at ports of departure of foreign nations, it exacts none at our own ports; it leaves the clearance of vessels, emigrant or otherwise, proved to be infected—as was the *Massilia*—at the discretion of those who command them. A clean bill of health can be obtained from the port in such cases in the absence of prevailing epidemic disease in the city, yet the *ship* may be dangerously foul. To fill the Bill, in this particular, the Government is already adequately equipped—it only needs detail. The United States Marine Hospital Service, has, in default of international legislation (contemplated by Senator Harris' bill); done some excellent work through the courtesy of foreign nations—particularly at the port of Havana—to prevent the transmission of epidemic diseases thither. And, apparently, with the purpose of continued reliance upon the service of its medical officers in foreign ports, by courtesy, a bill is now before Congress to that end. But surely it must be well known to all persons conversant with the exclusive rights and practice of foreign nations, that such sanitary service is essentially unstable, ever liable to conflict with the sanitary authorities at ports of departure, and cannot be relied upon to prohibit the departure of an infected ship. The Marine Hospital Service is out of its sphere in this direction, while there is an open field for its labors in another, if the United States would set the example by practicing its own precepts—would see to it that the condition of every *vessel*, before she is permitted to receive cargo, is *clean* in a sanitary sense, and not at the mere voice of her master.

Surely it would be difficult to designate a more inviting field of labor—certainly none more germane to all that pertains to the health of mariners—than this for the Marine Hospital Service.

With such coöperation as this suggestion contemplates, under the auspices of a national board of health as provided for in Senator Harris' bill, and the international sanitary service which it would then be certain to secure, the transmission of epidemic diseases by commerce would speedily cease.

PUBLIC BATHS A PREVENTIVE OF DISEASE.

Read in the Section of State Medicine at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY CHARLES H. SHEPARD, M.D.,

OF BROOKLYN, NEW YORK.

A nation is powerful in proportion to the health of its people, and individuals are successful in life largely in proportion to their good health. Man begins existence with a certain stock of vitality, and his success or failure depends upon a careful or prodigal use of that capital, so that good health, which should be his birthright, is of more importance than special fitness for life work.

The losses to the community from disease are beyond estimate, yet these are so common as to blunt our realization of the conditions that surround us. What more desirable therefore, than to seek some measure of relief? It is well to be able to cure disease, but a thousand fold better to prevent it. Herein lies the physician's most noble field of work, that of Preventive Medicine.

Of all forms of prevention or cure, none appeals so directly to common sense as that of baths. None are more simple, and none more powerful when rightly directed. They are inexpensive, and easily put into practice. They act upon the whole surface of the body, and as a rule are agreeable to all: for by quickening the action of the skin a more vigorous action of every internal organ and function is secured.

There are baths of many kinds, the swimming bath, the plunge, shower, douche, warm water baths, medicated baths, mud baths, and the steam or Russian baths; lately the warm water shower bath has deservedly won much favor, but for completeness of adaptation to all classes and conditions of health and disease, no bath that ancient or modern science has yet devised, is equal to the hot air, or as it is more commonly called, the Turkish bath. It is a natural stimulus, and invigorates as nothing else can. It meets all the conditions, either local or general, where any bath is indicated, more fully than any other process.

It has accomplished more as a remedy than any other one agency, and has never been known to injure, when applied by competent hands.

The action of heat, which constitutes the main feature of the Turkish bath, increases the vigor of elimination, and gives full opportunity for the destruction of poisonous ptomaines which are quickly rendered inert or thrown out entirely. The secretions are made more active, and the excretions are increased in volume and efficiency. The increased circulation promotes the discharge of old or used up tissue and the building up of new. The blood is at once a food stream and a sewage stream; for the living body is in solution in the blood, as is also the dead body that has done its work and needs to be eliminated. When it is seen that rheumatism or any other blood disease, which is acknowledged to be of microbic origin, has been quickly relieved by the action of heat, as applied in the Turkish bath, what more logical than to consider that this effect is produced through the destructive action of heat upon the microbes? Furthermore, by purifying and invigorating the circulation, it is reasonable to suppose that the normal germicidal activity of the serum of the blood and other fluids of the body is increased. This throws a hopeful light upon the future treatment of disease. No matter how certainly we may recognize disease, or how quickly we may relieve the pains and penalties of an outraged nature, if we do not thereby learn to avoid the cause, we are pursuing only an *ignis fatuus*, and the lesson of disease is lost.

The modern science of medicine made a great step forward when it came to the knowledge of the disease of the cells, otherwise called cellular pathology. Disease seems to be the result of blood poisoning. Symptoms are but an effort of nature to dislodge this poison, or obtain freedom from it. It is an interesting thought of Dr. Carpenter that cancer is an excretory organ, formed to get rid of poisons in the system. The organic matter given off from the lungs alone, and which is a deadly poison, has been estimated at thirty or forty grains a day for each adult. It is recognized that a drowned man is only a poisoned man, because the waste that is continually going on in every part of the system is of such deadly character as to destroy life in a few moments. When the eliminative functions are in any way interfered with, in so far must the man be poisoned. This is due to the formation and absorption of poisonous substances, and while the specific germ is a cause of disease, the chemical factor is even more important.

In the work of elimination, the depurative process through the skin, is equally, if not more important than that through the bowels and kidneys. Ordinary colds are best explained by the supposition that certain effete matters, which in health are normally excreted by the skin, are retained. This theory is borne out by the effects on the nervous system, and also by the fact that the only successful methods of treatment are essentially eliminative.

To more fully elucidate this subject let us refer to the ancient history of the Turkish bath, as well as the record it has made during the past thirty years or more.

As far back as 500 years before the Christian era, Hippocrates advised the use of baths in general, and the sudorific bath in particular, for the alleviation of disease. In warm climates the practice of plunging into cold water for purposes of enjoyment and invigoration has been wellnigh universal, but the establishment of thermæ, or hot air baths, was looked upon in the first instance as medicinal, though subsequently they were resorted to as a luxury.

Celsus prescribed these baths to his patients. Martial, in a celebrated epigram, recommended the dry heat of the laconium, and also baths in the cold water of Virgin and Martian, two streams in southern Italy famed for their purity. Galen left on record directions for treating marasmus by the use of these baths.

The early Christians, who led a severe and virtuous life, regarded public baths with horror. For many centuries baths and bathing were proscribed. Michelet speaks of the Middle Ages as "a thousand years without a bath." This long period was a time of terrible epidemics. Mysterious plagues, feeding, no doubt, upon the filth of the towns, swept away myriads of people.

Mæcenas, the friend of Augustus Cæsar and of Horace, is said to have been the first who introduced warm baths at Rome, though it is probable that warm bathing was a familiar practice throughout the East long previous to this period. The Hindoos and Mahommedans make cleanliness a part of their religion, and practice what is inculcated. India, Persia and Egypt were early acquainted with the bath. The primary construction was crude, but it was reserved for the Greeks, the greatest architects of ancient times, to erect suitable buildings for public baths.

After the conquest of Greece, about 150 B. C., the Romans soon learned to imitate the example of their predecessors, and in the Augustan age, nearly coeval with the Christian era, Agrippa, the Consul, erected an enormous and splendid bath, of which one small portion, the portico, now called the Pantheon, has descended to our times in a state of excellent preservation. More than a thousand other baths were destroyed by conflagrations and by barbarians, rather than by the hand of time. The ruins of these baths are among the most wonderful monuments of antiquity. Several of them are conspicuous for their extraordinary magnitude, and the magnificence of their decorations. To these baths, consecrated to health and recreation, the Roman citizens resorted as their chief enjoyment on holidays and festivals. The bath was the club house, the café, and the restaurant, and here athletic games of all sorts were played, to give strength and vigor to the Roman people. The news of the day was sought for here, poems were recited, orators spoke from the rostrum, and minstrels sounded their harps.

The price paid for the enjoyment of all this luxury was one quadrans, their smallest coin, much less than one cent, and the Emperors would at times make the baths free, in order to popularize themselves with the people. In Turkey at the present day a large liberality is observed, every one paying according to his means; even the penniless cannot be legally excluded, if he be a Mussulman, as the bath is a religious institution among them, and every individual is required to attend it.

In ancient Rome, at the close of the third century after Christ, there were bathing facilities, including both public and private baths, for 62,800 citizens at any one time.

The earlier generations, those which made Rome the queen of the world, had always considered the bath the most important event and the most essential requirement in their everyday life, though in the course of time, and particularly after the conquest of the East, this was very much changed.

The Romans established precisely similar baths in the countries which they subjugated as they had established in their own, and they adopted a system of sanitary measures well worthy of admiration and imitation.

The occupation of Great Britain by the Romans during the first century of our era, continued for more than three hundred years. Wherever their armies were located, which was in nearly every town, extensive thermæ were built, and among the many then erected there are now to be seen the ruins of more than twenty-five in different sections of England. The most notable of these are in the cities of Bath and Chester. Fine broad roads were built across the kingdom, and thus was kept a line of communication from one station to another. Many ruins indicate the existence of villas, where the Generals and Prefects resided. Attached to the villas were the ever accompanying thermæ, both public and private. Wherever the Romans carried their victorious arms they established their laws, religion and customs.

And where now is the bath? The Romans are gone. The Roman bath is apparently lost. Mr. Urquhart, the father of the modern bath, says: "A people which knows neither Greek nor Latin has preserved this great monument of antiquity on the soil of Europe, and presents to us, who teach our children only Latin and Greek, this institution in all its Roman grandeur and its Grecian taste. The ancient Roman bath lives in its modern offspring, the Turkish hammam."

In our schools are taught the language, literature and laws of the Romans, but one of their most important customs and sanitary measures, and one which very materially served to make them the all-powerful and great people that they were, that of the bath, has been entirely neglected.

It was not till the personal experience of Mr. David Urquhart in the East led him to advocate its extension to the West that the modern movement began. In 1850 he published his book, "The Pillars of Hercules," in which he gave an account of the Turkish and Moorish baths. Six years afterward he became acquainted with Dr. Richard Barter, proprietor of a hydropathic establishent at Blarney, in Ireland. At that place they together constructed the first Turkish bath of modern times.

Gibbon remarks, "Among the innumerable monuments of architecture constructed by the Romans, how many have escaped the notice of history, how few have escaped the ravages of time! The majestic ruins of thermæ, still scattered over all Italy and the provinces, would be sufficient to prove that those countries were once the seat of a powerful and a polite empire. Their greatness and their beauty deserve our attention, but they are rendered more interesting, inasmuch as they were erected at the public expense, and intended for public utility."

The Augustan age was an epoch conspicuous for the development of sanitary measures for the promotion of public health; it was then that a public officer of high dignity was appointed over the management of the baths.

In all the hot air baths of the ancients, as well as in those discovered as having existed in the most primitive form in various parts of the world, however striking the difference may have been as regards construction, the same principle is observed throughout. All are directed to the one great end, that of *sweating*.

In a remedial or therapeutical point of view, the hot air bath claims an attention which is being slowly recognized by the medical profession and the public, and possesses medicinal and sanitary properties far beyond the ordinary bath of warm water. This is based upon its powers of altering the chemical and electrical conditions of the organic structures of the body, and abstracting its fluids.

The work that it has accomplished since its introduction into this country, nearly thirty years ago, has proved beyond question, that there is no more powerful agent for the prevention as well as cure of all filth diseases, fevers, diphtheria, scarlatina, and even small-pox, as well as the almost universal complaints of colds, catarrh, influenza, etc.

The remarkable success of the Turkish bath in the treatment of rheumatism and all blood diseases, preeminently shows the advantage it would be to the community, were large public baths of this kind established throughout the country. With a reform in the dietetic habits of the people, and a frequent and a habitual use of the Turkish bath there is good reason to believe that rheumatism and many other diseases would be far less prevalent. "We ask ourselves," says Erasmus Wilson, "not what disease will be benefited by the thermæ? but *what disease can resist its power?*"

Every hospital, asylum, poor-house, in fact all institutions, and especially those where people are massed together, should not be considered thoroughly equipped without a complete Turkish bath.

Our people are now required to use disinfectants in many cases, but disinfectants come after disease has done its deadly work. Would it not be much more desirable, as a sanitary measure, to require the use of the bath, as a preventive of disease; inasmuch as bathing in its most complete form is the best kind of disinfectant?

We know that many epidemic and contagious diseases would be wiped out of existence by proper sanitary measures enforced in the localities where such have existed, but the culmination of all sanitary measures for the individual would be the Turkish bath.

An incident from a report published some thirty years ago, illustrates the value of the bath in the Island of Cyprus, which contained a mixed population of Mohammedans and Christians. Among the former consumption was not known; among the latter, there was from 12 to 13 per cent. of deaths from that disease.

The great value of this bath has also been thoroughly demonstrated in the treatment of defectives and incorrigibles at the Elmira Reformatory, as appears from a report by the attending physician, Dr. H. D. Wey.

We tax the industrious that we may punish those whom our neglect has made criminals and paupers; we multiply police and public house regulations; and expend large sums in hospitals, but we utterly deride the simple, and comparatively inexpensive appliance of the bath.

The conviction is irresistible that the reason of the universality of its use was because of its utility, that it possessed a healthful and curable potency, which commended it to the practical wisdom of mankind.

American and European visitors to Japan speak with admiration of the public baths of that country, that are not only kept open in summer, but are warmed and open in the winter. In the city of Tokio there are between eight and nine hundred public bathing establishments, each frequented by at least three hundred people, who pay for the privilege an extremely small sum, so small that no one is too poor to afford it. Outside of these baths the Japanese are very much given to bathing in their own houses. They are one of the cleanliest people in the world. Travelers from the Western world frequently express their regret, in describing these Japanese baths, that the progressive peoples of Europe and America have no such establishments.

John Wesley taught that "Cleanliness is indeed next to Godliness." People who are habitually clean are habitually temperate; cleanliness and temperance are twin virtues, and induce self-respect, industry and order. The cost of building and maintaining public baths, which promote cleanliness, temperance, health and morality, would be infinitely less than that of the poor-houses, hospitals, jails, and the legal machinery required therewith. If the masses of our people were given an opportunity of making a selection between the tyranny and self-debasement engendered by the saloon, and the freedom, moral exaltation, and self-respect emanating from the bath, there is little doubt that we would soon have a new order of society.

There is no more doubt of the importance of cleanliness to the person than there is of cleanliness of the streets and houses, in conducing to the well-being, the comfort and the health of the public at large, for if these are only attended to among the masses, there will be proportionally a less chance of the invasion of epidemics, which first begin with the less favored portions of the community and finally sweep all before them. It has frequently been demonstrated that the epidemics which have visited our land, had, for their breeding ground, if not for their origin, the most palpable violations of sanitary laws.

If no higher motive were to influence us, that of self-defence, or prudence, possibly fear, might stimulate us to provide against evils so formidable, which are apparently so effectually and easily guarded against by a frequent use of the Turkish bath. As one of the great sanitary necessities of the day, it is most desirable that large public Turkish baths, as a preventive of disease, should be established throughout the land, at public expense, placed under medical supervision, with admission at nominal rates, so that the poorest individual can partake of their advantages with a feeling of self-respect in paying something for the help and comfort to be derived therefrom. They should be made more attractive than the saloon, and thus prove a more powerful antidote than any law of prohibition.

This will react on the social life of the masses. By purifying the people we would quickly purify their homes.

Heretofore this work has been left to private enterprise, but the time is fast approaching when it should be entertained on a larger scale than any thing yet attempted. The public who are to be the chief beneficiaries, should have the privilege of sharing the expense as well as the direction of such institutions.

The endowment of public baths was among the noblest actions of the Roman Emperors. Eight hundred of those institutions adorned the capital of the Empire, and they supplied, during many eventful years, almost the only medicine to a people distinguished for their corporal and mental vigor.

If prevention be better than cure, then, to found a great public bath would confer a grander blessing than to erect a hospital. To provide an institution which should bring refreshment and vigor to the overworked, healing to the sufferer; warmth, comfort, and self-respect to the victim of squalor, poverty, and neglect, would be to raise a cenotaph more glorious

> "Than ever from Attic or Etruscan hands arose."

THE SANITARY SIDE OF THE DRINK PROBLEM.

Read before the Section of State Medicine, at the Forty-third Annual Meeting of the American Medical Association, at Detroit, Mich., June 7, 1892.

BY T. D. CROTHERS, M.D.,
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Some conception of this problem may be obtained from the fact that in 1891 over eight hundred thousand persons were arrested in this country charged with being intoxicated and committing petty crimes.

It may be fairly presumed that at least half as many more, using spirits to excess did not come under legal notice. If to this is added opium, chloral, and other drug narcotics—the number reaches enormous proportions.

Practically this vast army of inebriates represents all classes and conditions who are literally withdrawn from the ranks of active workers and producers, and become obstacles and burdens to sanitary life.

They are centers of pauperism and progressive degeneration and the most unsanitary physiological and psychological conditions.

This army literally follows a continuous line of retrogression which antagonizes all evolution, growth and development, and seems to be governed by a uniform law of cause and effect, marked by a beginning development, decline and extinction, the mystery of which makes it the most absorbing scientific problem of the age.

To-day over a million workers are waging a great moral crusade to break up this evil. Politics, religion, education, the pulpit and press are combined in a struggle with this problem, approaching it exclusively from the moral side. Mediæval superstition and moral theories are urged through the pledge, prayer, persecution and punishment to explain and check this evil.

Above all this moral agitation and effort the voice of science appeals to physicians for help. This army of inebriates is increasing, and with it losses and degenerations both of individuals and the race. While inebriates are a part of the great army of the "unfit" that are "mustered out" and crowded out in the race march—there is yet unmistakable evidence that some can be halted, headed off, and returned to health.

Already science has pointed out the possibilities of cure and prevention, that give promise of practically stamping out this evil in the near future.

Some of the outline facts from the sanitary side will show its extent and the possibilities of cure from a larger and more accurate study of the subject. The great sanitary problem of to-day is the knowledge and removal of the causes of disease, and the placing of the victim under the best conditions for a return to health.

To remove the conditions which favor and encourage disease, and break up the breeding places of crime, pauperism and allied forms of degeneration is one of the future certainties of science. There are to-day over a million unrecognized inebriates who are the most defective, dangerous, and degenerate of all classes.

They are centers of pauperism and sanitary evils that pass on into the next generation entailing misery and loss beyond estimate.

The superstition of personal freedom with free will, permits this army of inebriates to go on year after year, destroying themselves, increasing the burden of their families, and building up veritable centers of physical and mental degeneration.

Nothing can be more disastrous from a sanitary and scientific standpoint than the indifference which permits men and women to use alcohol and other drugs, not only destroying themselves but entailing all degrees of degenerations on their descendents.

Sanitary science teaches that no one has a right to destroy himself and peril the health and comforts of others. The moderate and periodic drinkers are always sources of danger to themselves and others. To wait until they become chronic and degenerate into law breakers is to apply the remedy when it is too late.

Public sentiment should not permit one to become an inebriate or tolerate him after he has reached such a stage. He should be prevented and forced to undergo treatment and should be regarded as dangerous to the safety and welfare of the community and isolated until fully restored.

In the near future science will demand that every inebriate have legal guardianship and restriction of personal freedom until he recovers. When these cases realize that such restrictions will be enforced, they will seek treatment in the early stages of their disease. The teaching of science demands that both the pauper and millionaire be seized at the very onset of and forced into conditions of health and sobriety, and saved from becoming burdens on the community, and centers of ruin and misery.

The saloon and the free sale of spirits from a sanitary point is a source of extreme danger. Its influence in any community is bad. It brings sanitary perils by destroying the physical and mental stability of its patrons and both directly and indirectly favors the worst conditions of life. The saloon has no claim for recognition as a business. It is simply a parasite thriving on the decay and degeneration of the community. It is only tolerated by the dense ignorance and selfishness of its defenders. It should be classed with foul sewers, dangerous waters and unsanitary death-dealing forces, etc.

Persecution as a moral evil keeps it alive, but examination from the standpoint of science would be fatal to its perpetuity.

The drink problem would be largely solved could the favoring conditions of saloons be changed.

Unregulated marriage, now a mere matter of accident and impulse is another source of danger perpetuating the drink-curse. Inebriates, insane, and neurotics of all degrees are permitted to propagate and transmit their defects to succeeding generations. The result is a race of neurotics that develop inebriety, and all forms of insanity and idiocy, together with all associated conditions.

The army of neurotics beyond all question reappears in succeeding generations with similar or interchangeable diseases. The inebriates of this generation who marry and raise up children are creating paupers, criminals and insane for the next. They are wrecking their descendents by crippling and incapacitating them to live healthy lives.

Every community illustrates this fact, and the drink problem is more complex and difficult of solution on this account.

We need scientific study and instruction on this point, and a public sentiment that will make marriage a question of sanitary science, then we shall have the means for practical prevention and cure of many present evils.

The drink problem has another sanitary side in defective nutrition—bad ventilation and other conditions of an unhealthy character.

Build up the physique, relieve the condition of starvation—remove the defects of unhealthy living and in many cases the tendency of the drink craze is thwarted.

Mental change—unrest and sudden change involving a strain on the organism to adapt itself to the new conditions for which it is unfit, also overwork, underwork and diseased conditions, defective and retarded growths, and nearly every kind and degree of mental and physical defect enter into the drink problem, and must be recognized and studied.

The present methods of dealing with this problem are followed by startling results.

Of the 800,000 persons who were arrrested last year for inebriety not one per cent. were benefited. Over 99 per cent. were made worse, and confirmed in their habits. The station house and jail are active recruiting places, and the hosts of inebriates who are forced into them are transformed into legions of incurables which never desert or leave the ranks.

Physically the short imprisonment of the inebriate simply removes him from spirits and leaves him less capable of leading a temperate life.

Mentally he has lost a certain self respect and pride of character essential to recovery.

The first legal punishment of inebriates is followed by a species of fatality seen in a constant repetition of the same or allied offenses.

This fact is so apparent that these cases are called "repeaters" in the courts, and the number of sentences to the same person often extends to hundreds.

In one thousand cases confined at Blackwells' Island, New York, 935 had been sentenced for the same offense, drunkenness, from one to 28 times.

The first sentence was a regular switch point from which the victim was precipitated to a constantly descending grade, becoming more and more incapacitated for temperate living.

The system of fines is equally ruinous, because it falls most heavily on the families, making it more difficult to support themselves, thereby increasing the perils of pauperism, both to the victim and those who depend on him for support.

It may be said, and the statement is sustained by many facts, that the legal treatment by the lower courts of cases of inebriety is fully as fatal as the saloons themselves where spirits are sold.

The saloon and police court are literally the school and college for the training and graduation of classes of incurable inebriates that peril every sanitary interest in the country.

The fault is not in the courts and their administration of the law, but in the laws themselves, and in that state of public opinion which urges that all inebriates should be treated as wilful criminals, and arrested and punished as such.

Thus, year after year this terrible farce of prevention of inebriety by fines and short imprisonments goes on and the incurability of the poor victims increases. Crime is increased, pauperism is increased, the most dangerous sanitary conditions are fostered, and the burdens of taxpayers and producers are increased.

The inebriate is always debilitated, and suffers from impaired brain and nerve force—alcohol has broken up all healthy action of the body.

In prison both the quality and quantity of food are ill adapted to restore or build up the weakened organism.

The hygienic influences of jails and prisons are defective in every respect, and adverse to any healthy growth of body or mind.

The psychological influences also are of the worst possible character. The surrounding. and the associates precipitate the victim into conditions of mental despair from which recovery is difficult, if not impossible.

The only compensation to the inebriate is the removal of alcohol, and in this deprivation the State most terribly unfits him and makes him more and more helpless for the future.

Thus, while civilization is one of the sources from which inebriety is produced, the blundering effort to remove it by penal punishment is an actual factor in increasing and intensifying the disorder.

The treatment of inebriety from a scientific standpoint, has passed the stage of experiment and is supported by a great variety of experience and collateral evidence that cannot be disputed.

Probably the largest class of inebriates in this country are without means of support and may be termed the indigent and pauper class.

This class, non-supporting and burdensome, should come under legal recognition and be committed to workhouse hospitals, built for this purpose, preferably in the country, upon large farms and amid the most favorable environment.

These hospitals should be training schools in which medical care, occupation, physical and mental training could be applied for years, or until the inmates had so far recovered as to be able to become good citizens.

Such hospitals should support themselves in part from the labor of their inmates, having been built from monies received from a tax imposed on liquor dealers, or a license fund, and be independent of the tax payer or of State support.

These places would receive the classes who now are sent to jail, and that other class who are neglected until they have passed into the chronic stage and have become inmates of prisons and insane asylums.

A very large proportion of these several classes could be made self-supporting while under treatment, and in many cases be an actual source of revenue. The hospitals would naturally be divided into two classes. The first would receive the better, or less chronic cases; the second would have the incurables, and those whose recovery was deemed more or less doubtful. In one case the surroundings and discipline would be more adapted for the special inmates than in the other, but the same general restraint would be followed in each.

In both recoveries would follow. A large class would be restored to society and become producers. In the second, cases would be housed and made to take care of themselves, which would be an immense gain to society in economy and safety.

Private enterprise should be encouraged by legislation to provide smaller hospitals for the better class and those who would be unwilling, or whom it would be undesirable to compel to enter public asylums. Here the commitments should be both forced and voluntary, and the restraint combined with the fullest and latest appliances of science for the end to be accomplished, blending seclusion and good surroundings to build up and make recovery possible.

The first step is to recognize the fact that the inebriate, whether continuous or periodic, has to a greater or less degree, forfeited his personal liberty, become a public nuisance and an obstacle to social progress and civilization. Second, that he is suffering from a disease which affects society and every member of the community in which he lives, and from which he cannot recover without aid from other sources, making it absolutely necessary that he should be forced into quarantine on the same principle as the small pox or yellow fever patient. This is simply carrying out the primitive law of self-preservation. Naturally, the money to accomplish this shall come from the license revenue, on the principle that every business should provide for the accidents and injuries which follow from it. Railroad companies and other corporations are required to pay damages for the accidents which follow their business, and this is conceded to be justice. But to-day the tax on the liquor traffic is used to support courts and jails where the inebriate, by fines and imprisonment, is only made worse or more incurable. Thus, literally, the business of selling spirits is increased by the almost barbaric efforts of courts and jails, and every person so punished is made a permanent patron of that business. Against this all the teachings of science and all practical study utter loud protest.

The practical success of workhouse hospitals for inebriates is demonstrated in every self-supporting jail and State's prison in the country where the obstacles are greater and the possibilities of accomplishing this end more remote. This can also be seen in asylums for both insane and inebriates, in the various sanitaria and hospitals through the country where the capacity for self-support and the curability of these cases are established facts.

More than that, these hospitals would relieve society of great burdens, of loss and suffering, the diminution of the number of the inebriates indeed become a practical certainty, the extent of which we can have no conception of at present.

It is impossible at the present time to estimate the beneficial results that would follow a systematized plan of thus housing and treating the inebriate, but there are positive indications that its effect would be felt in all circles. One of the great fountain heads of insanity, criminality and pauperism would be closed, and a new era would dawn in the evolution of science.

HINTS UPON THE PATHOLOGY OF SO-CALLED FRIEDREICH'S DISEASE, BASED UPON THE STUDY OF A SERIES OF TWENTY-THREE CASES.

Read in the Section of Neurology and Medical Jurisprudence, at the Forty third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY SANGER BROWN, M.D.,
OF CHICAGO.

Of the utmost importance in the present condition of the subject is any addition to the stock of exact clinical and pathological data in the study of degenerative diseases of the central nervous system, for it is only by the examination of such data that a durable and reliable basis of classification can be reached for the guidance of the practitioner.

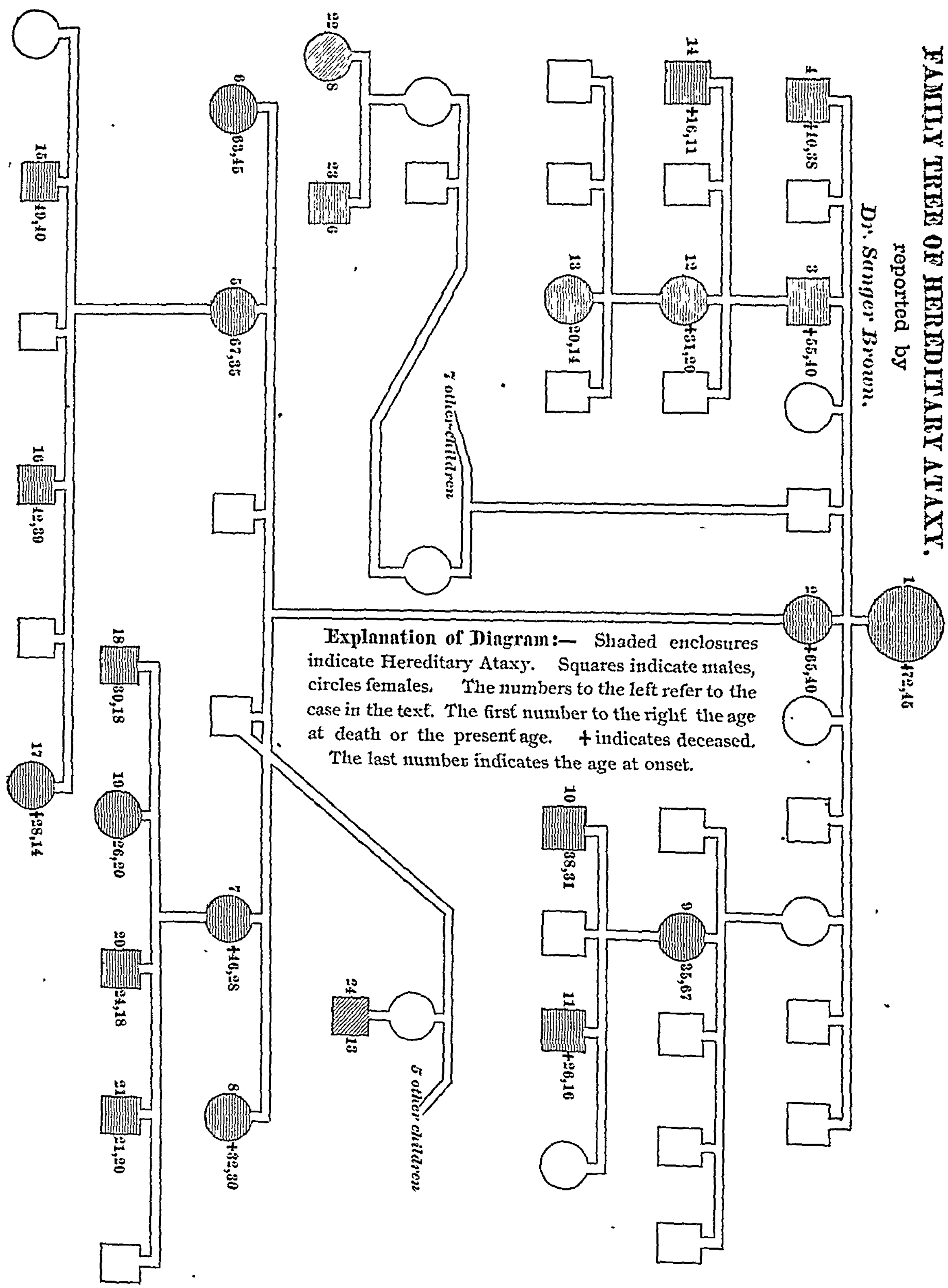
There has been such a large accumulation of recorded facts bearing upon the subject within the past few years, that the conclusions previously reached from the data then at hand, are no longer tenable.

Two broad divisions, however, may so far be safely made, one in which heredity can be demonstrated to play a prominent part, and one in which this influence is not apparent. Of the former, the so-called Friedreich's disease may be taken as a type, and of the latter the ordinary form of tabes, and unless it should be demonstrated that heredity plays an important part in the progressive form of spinal muscular atrophy, and disseminated sclerosis, the pathological process giving rise to the symptom complex, commonly described as Friedreich's disease, must, I think, at the present time, be regarded as constituting the sole instance of hereditary degenerative disease of the central nervous system. In this disease the essential pathological features are, that certain tissues have derived such a deficient vital endowment from the parent, that they undergo a more or less premature, rapid and extensive degeneration, and further, the effect of this process is mainly, if not exclusively, confined to the so-called upper nerve segment, and to the conducting filamentary process, and not the body of the cell of this segment; different cases and series of cases presenting considerable variation both in the extent, degree and period of onset of the pathological process.

That in the future there may be discovered certain laws determining the significance of certain variations, such, for instance, as whether or not the knee jerk is lost, retained or exaggerated, or whether or not there is nystagmus, optic nerve atrophy or integrity of the sphincter, is quite possible; but existing data do not, I think, render an attempt to found a classification upon these differences at present feasible.

With this view of the subject, the symptom complex marked out by Friedreich in 1861, may be taken as the first link in the chain, and up to the present time the report by Tooth, of London, in 1891, of four brothers affected with spastic paraplegia without ataxy, but with affection of the voice and sphinctres, and no other important symptoms, as the last link; all other cases, including those of this series, forming intermediate links. For notwithstanding the differences existing between this series and that described by Friedreich, the heredity, the ataxy, the marked affection of the voice, would strongly suggest, if not indeed, positively demonstrate that they properly belong in the same category, and this being admitted the cases reported by Tooth should also be included, for there is as much difference almost between my series and Friedreich's, as Tooth's series and mine.

FAMILY TREE OF HEREDITARY ATAXY.
reported by
Dr. Sanger Brown.



Explanation of Diagram:— Shaded enclosures indicate Hereditary Ataxy. Squares indicate males, circles females. The numbers to the left refer to the case in the text. The first number to the right the age at death or the present age. + indicates deceased. The last number indicates the age at onset.

The comparative absence of the various neuroses among the relatives of the individuals composing this and other series, and among the individuals themselves, has suggested to my mind the probability that the primary defect might be rather in the accessory than in the essential nerve elements, for it is a matter of general belief among neurologists that if hereditary defect of the nervous elements is proven to exist, this is apt to be manifested by the appearance of various neuroses in the family so affected. Here we have, indeed, marked evidence of an hereditary degenerative process affecting the nerve elements, but if the above considerations are valid, not commencing in them. This view is rather supported, also, by the consideration that the defect being transmitted in and confined to a protoplasmic cell, the whole cell ought reasonably to suffer to some extent at least, and furthermore, this view is harmonious with the assumption that the inherited defect is confined to the connective tissue cell, which is effected throughout, but inconsistent with the theory that the primary defect is in the nerve cell, for in the latter case we have to conceive of the inherited defect as being arbitrarily restricted to a mere part of a cell, to wit: the axis cylinder, and that in the face of the generally accepted belief that the nerve cell and its processes are continuous and homogeneous. Then, too, the frequency with which there is considerable jerkiness in the various movements, including nystagmus, suggests a pathological analogy between this disease, and disseminated sclerosis, in which the primary pathological process almost certainly commences in the connective tissue element; in the former the process being more general and less intense than in the latter. In disseminated sclerosis it is easily conceived how a motor nerve current may be suddenly brought up in full career, so to speak, against a sclerosed patch, and with momentary interference force its way through, and thus on to its destination with a corresponding affection of movement. In Friedreich's disease a similar obstruction. though less concentrated and arresting the current more gradually, may be hypothecated with a corresponding motor result. From the foregoing considerations I deduce the corollary that motor defects in this disease are mainly due to interference with the centrifugal paths of the upper nervous segment.

The accompanying diagram represents a series of cases of hereditary degenerative disease of the central nervous system considerably more extensive both in regard to the number of individuals affected, and the number of generations through which it has extended than any that has hitherto come under my observation. I presented essentially the same series a few months since to the Chicago Medical Society, but was then unable to present any of the cases, as I had hoped to do. I am very glad to be able to present two of the cases now, because I am well aware that where a report so extensive is made, so circumstantial, and withal, departing so widely from previous reports, as to rudely disturb, perhaps, existing theories, the skeptical might naturally be expected to mistrust either the capacity or honesty of the reporter.

I have had four of these cases (18, 19, 20 and 21) under observation over a year, and two more (9 and 10) for about nine months, and still another (22) I examined thoroughly three months since, that is since reporting the series to the Chicago Medical Society, and since that time also two cases (5 and 9) have died (and unfortunately, I was unable to get an autopsy). Two others (5 and 15) living at a distance, were thoroughly examined for me by Dr. Norman Bridge, so that in nine of the cases the examination may be regarded as fairly satisfactory.

In all the other cases I have been able to get a definite enough account of the symptoms to enable me to make a diagnosis, and this is not such a difficult matter, because when the disease is well developed it has so many prominent diagnostic features, and because the families among whom it has been distributed have been composed of people of good social position, of good education and superior intelligence.

Case No. 18.—Male, single, thirty years of age, business man of correct habits, with an excellent family history aside from this disease, the hereditary relations of which are readily seen by reference to the chart. With the exception of the effects of the disease now under consideration, the general health has always been good, and the patient, from his childhood up, showed more than an ordinary degree of bodily and mental vigor, but these characteristics were judiciously directed, so that they do not appear to have had any etiological bearing upon his case, and I merely state them so definitely in order to make it clear that in his case, at least, development was normal.

In this case, as in many others of the same kind, the symptoms developed so insidiously, that it is impossible to fix upon a very exact period as marking the onset of the disease. The patient thinks, and this opinion is shared by some members of his family, who, like himself, have made a close study of the subject, that at the age of puberty there was a greater affection of the voice than could fairly be attributed to that physiological phenonenon alone; and it is quite certain that at eighteen he could not walk steadily when fatigued. and would communicate a perceptible movement to any moveable object against which he might happen to support himself.

Weakness did not appear in the legs until several years later, and it has always been distinctly subordinate to the ataxy. Ataxy did not appear in the arms until about three years after making its appearance in the legs. An increase in the knee jerk was an early symptom no doubt, because quite early in its course the disease was pronounced spastic paraplegia by experienced and eminent physicians. A troublesome tendency to choke was a comparatively early symptom, and this has continued down to the present time. There have been no sensory symptoms of any kind, no affection of the sphincters, and no muscular atrophy or trophic disturbance, and no disorder of the sexual functions. For the past year the body weight has been about stationary, but for several years prior to that there had been a gradual decline amounting to about twenty pounds.

The ataxy, impairment of vision (of such a character that patient could read best in a dim light), difficulty in articulation and weakness have gradually increased, sometimes more and sometimes less rapidly, for the past thirteen or fourteen years, until the patient has reached his present condition.

The patient cannot walk without the assistance of another person, and all the time has a marked subjective feeling of insecurity, as if his head must certainly fall violently to the ground. There is distinct weakness of the legs, but I know of no good way of exactly estimating its degree. The knee jerk is much exaggerated, and equal on the two sides, and there is ankle clonus. The skin reflexes appear normal, excepting the cremasteric, which is perhaps subnormal. There is marked ataxy in all voluntary movements, and there are associated movements extensive in range and distribution. Thus, for instance, a voluntary movement of the hand and arm often sets up associated movements in the opposite hand, the head and face. There is ataxic disturbance in the muscles concerned in articulation, including the tongue. with corresponding defect of speech.

There is marked impairment of vision, due to optic nerve atrophy, vision being 20-200. There has been diplopia at times of a few days' duration. There is ptosis when the patient is at rest, but the lids are often voluntarily raised so high as to show the sclerotic above the iris. There is lagging of the right external rectus to the extreme right, but no incoördination in the external ocular muscles, and no nystagmus. The pupils respond to light, accommodation and stimulation of the skin of the neck, but more slowly than normal. There is not much peripheral limitation of the visual field, but there is almost complete color blindness, red only being distinguished with any degree of certainty. Closure of the eyes has no material effect upon the ataxy.[*]

Case 20.—Brother of 18. Age 25, business man of correct habits, and during boyhood a frequent winner of prizes in athletic contests. Excepting that the disease appeared later, has advanced less rapidly, and that the range of tissues involved is more limited, the history of Case 18 may be used for this one. The tendency to choke is absent, and though the first symptom appeared at 18, the arms are not yet much affected.

Here there is marked ataxy in the legs, as shown in the gait, but it would be difficult to demonstrate weakness. The ataxy is not much increased by closure of the eyes, and as already stated, the arms are not yet much involved, and neither have associated movements appeared to any considerable extent. The vision is reduced considerably, and is much better in a dim light than in a bright one, but one would hardly make a diagnosis of optic nerve atrophy from an examination of the disc alone. There is ptosis at rest, and the lid is often raised too high by voluntary effort, but there is no nystagmus. There is obvious, but not great, impairment in articulation.

In *Cases 10 and 17* there appears to have been something like lightning pain, not severe, however; and in 10 there is considerable insufficiency of the rectal and vesical sphincters, though in every other respect the case is practically the same as 18. I might add, too, that in Case 18, during the last months of life, there was marked melancholia, with great emaciation.

Case 22 is a rather backward girl of 8, whose parents at the age of 5 first noticed a tendency to walk upon the toes, which has steadily increased, so that at the date of my examination, there was observed some permanent spastic contracture of the right leg at the knee, with ankle clonus on that side, and greatly exaggerated knee jerks on both sides. No atrophy, ataxy or apparent weakness, and no disturbance of sensation.

For a more complete report of the whole series I must refer to the February number of this year of the *North American Practitioner* and the *Chicago Medical Recorder*, from which it will appear, I think, that Case 18, as here described, with the exceptions here noted, is fairly typical of the series.

Discussion.

Dr. C. K. Mills, Philadelphia, Pa.:—These cases are of great interest, and particularly the part of the paper of Dr. Brown which gives us his view as to the pathology of the disease. Friedreich's ataxia, and a series of cases of a different sort have, I think, a certain bond in common. It is one of the most interesting matters in connection with the discussion of these cases to recognize this bond of union. We have in the wards at the Philadelphia Hospital cases of Friedreich's ataxia, and half a dozen other forms of disease which, I believe, are all hereditary; for instance, the so-called hereditary chorea, idiopathic muscular atrophy, and the association of muscular atrophy with pseudo-hypertrophy, etc. We have had, in my own personal experience also, a few cases of ordinary spastic paraplegia, and of the ordinary type of locomotor ataxia which were, in so far as the history is concerned, hereditary. A most interesting case is a young man, 26 years old, who presents a typical case of the ordinary form of locomotor ataxia, with lancinating pains, disorders of sensation, with ocular and bladder symptoms, etc. In this case the disease began at the age of 14 years. Cases of combined sclerosis or ataxic paraplegia occasionally begin early in life. We should learn to take a more philosophical view of these cases, and while we differentiate more and more the nervous diseases into types, we should be careful not to lose sight of the bond which connects them. A large number of them are due intrinsically to the same tendency to arrest of development. To many of the forms of hemiplegia and spasmodic affections of children these same remarks may apply.

As to the pathology of the disease, I think the views advanced by the author of the paper are of the greatest interest. Dr. James Hendrie Lloyd, of Philadelphia, and others maintain that there is a similarity between cases of Friedreich's ataxia and syringomyelia. Dr. Lloyd believes that if the cases were closely studied a certain percentage of them would be found to be cases of syringomyelia. In a tabulated report by Dr. Crozier Griffith of some 150 cases, a few of the autopsies indicate the pathology to be of this character. In several cases supplementary central canals were apparently present, as well as enlargements of the original canal; or the canal itself was patulous, which, of course, is not the case as a rule.

Dr. F. X. Dercum, Philadelphia, Pa.:—I have seen a number of cases present typical Friedreich's ataxia in which there was loss of knee jerk. We have in our wards in Philadelphia a patient in whom a similar degenerative change in the cord doubtless exists, but with the ataxia there is also associated marked chorea. Whether we have at the beginning a clear understanding of the cases of adult and hereditary chorea is a question, but certainly the facts at hand are very suggestive.

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[*] Dr. W. T. Montgomery and Dr. Casey A. Wood examined the eyes and made report.

A CASE OF ABDUCTOR PARALYSIS OF BOTH VOCAL CORDS.

Read before the Section of Laryngology and Otology, at the forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JONATHAN WRIGHT, M.D.,
OF BROOKLYN, N. Y.

The report of the following case is made more with a hope of helping to keep alive an interest in a puzzling subject than with a hope of adding anything entirely original to its literature.

K. T., maidservant, æt. 26, single, came for treatment to the throat class of the Out-Patient Department of Roosevelt hospital on Dec. 29, 1890.

Her family history was negative. She had a moderate alcoholic, but no specific history. Four years previously she began to have almost constant headache. She had pain in the bones and felt weak. She had shortness of breath and palpitation of the heart on exertion. She had some swelling of the feet and hands. At that time she was treated in the hospital under the diagnosis of simple anæmia. She had had similar symptoms since then but had kept at work. The previous winter she had considerable cough and expectoration. She had been run down since summer, and unable to work. For two months she had had cough and expectoration of phlegm. Five weeks before she had fallen in a faint and was totally unconscious for several minutes. A few days later her neck began to feel stiff and numb at the back. She had also numbness and dull pains in the right arm, side and leg, and she limped a little. Three weeks before admission she began to have some choking on swallowing. She felt as though there was something in her throat or behind it. There was no pain, but a deep seated numbness. A week later she began to make considerable noise at night in breathing. She had little or none of this when awake. She suffered some dyspnœa only on exertion. The feet had been a little swollen. She complained of no eye symptoms. She had a little headache. The numbness had grown less. She had some cough. Her appetite was poor. Her bowels were regular and her menstruation was normal. She was sent to the wards of the hospital. Her condition on admission, as noted in the history books of the clinic and the hospital, was as follows:

"She is fairly well nourished; her face is rather sallow and a little pale. When awake her breathing is audible at the bedside, but not loud. It is somewhat stridulous in character. She had some difficulty in talking at times. She seems to phonate, at those times, on inspiration rather than on expiration. This is especially so after a laryngoscopic examination. P. 74, R. 22, T. 99.

"A physical examination of chest show signs of a general bronchitis, especially on the left side. There is some curvature of the spine, with the convexity to the left in the upper dorsal and lower cervical region. There are no points of tenderness. She said she had been so from a child.

"Urine, acid, 1013, albumen faint trace; a few pus cells; no sugar.

"Laryngoscopic examination. The left vocal cord is immovable in the median line. The right vocal cord moves in abduction only throughout about one-third of its normal arc, so that in greatest abduction there seems to be only about one-eighth of an inch between the two vocal processes of the arytenoids. Both cords seem tense (but this is a condition I am never absolutely sure of, the degree of tension varies so much normally in different cases)."

She had noisy breathing at night more marked on inspi ation, but also on expiration. She also seemed to have some dyspnœa at night.

She was very hysterical and it was very difficult to separate her real symptoms from her imaginary ones in the accounts she gave of them.

Her cough and expectoration soon ceased under treatment directed to her bronchitis. She was also put on anti-syphilitic and anti-hysterical treatment with no beneficial result. There was no change in the laryngeal symptoms, either subjective or objective.

Her general health improved very much and she gained a great deal of flesh.

She was finally discharged April 29, 1891, after having been under observation for three and a half months in the hospital. She came again to the Out-Patient Department and I gave her one-sixth of a grain of sulphate of strychnia daily for ten days or a fortnight, with no effect.

On August 19, 1891, she was again admitted to the hospital for a sudden attack of dyspnœa which promptly passed away. She was again discharged two days later. After this she had from time to time attacks of dyspnœa complicated with hysteria and flatulence until April 29, 1892, when she suddenly died from suffocation. During the latter part of the time she was under the care of Dr. H. B. McCarroll, to whom I am under obligations for that part of her history. On the day she died I had an appointment with Dr. McCarroll for a consultation, with the idea of suggesting a thyrotomy and the excision of her vocal cords, having become convinced that otherwise she would die in one of her attacks, although none of them had been alarming. To our great disappointment we were unable to obtain an autopsy and so the case is robbed of much interest and probable instruction.

Three years ago, while interested in some cases of laryngeal paralysis, I reported two of them and gave a summary of the literature of the subject up to that date.[1]

The report of this case may serve as a text for a few remarks upon some experiments made in the last few years which have shaken some of my convictions, never very decided, in regard to the subject.

Although Burger,[2] in a recent very valuable monograph, has reported some cases of tabes dorsalis which very closely resembled the one reported here, I cannot believe that there was in this case any real posterior spinal or bulbar sclerosis, as the laryngeal "crises" were the only ataxic manifestations of the disease.

To quote from my former paper:

"Baümler and Johnson in 1872 and 1873, and later McCall, Anderson and Whipham reported cases of bilateral paralysis of the vocal cords, some of them in the median position, which were due to pressure on one vagus nerve alone. Johnson in another and a very able paper, explained this phenomenon on the strength of the researches of Rosenthal, and Waller and Provost, which were repeated by Professor Rutherford at Johnson's instance. Pressure on the trunk of the vagus may cause bi-lateral palsy, or spasm of one and palsy of the other side of the larynx, by reflex action due to the decussation of the nerve fibres in the medulla, since the vagus is made up of both afferent and efferent nerve fibres, while pressure on the recurrent alone can only cause paralysis of the affected side. This he believed to be the cause of many cases of sudden dyspnœa in thoracic aneurism. Finally he says, 'it is probable that the long continued irritation of the trunk of the vagus may gradually, as in cases of traumatic tetanus, induce such demonstrable structural changes in the nerve centre, as will explain the bilateral palsy which appears to be one of the results of chronic nerve irritation.'"

In the case here reported the curvature of the spine in the lower cervical region with the convexity to the left, would suggest that the body or lateral process of a cervical vertebra might press upon the left vagus nerve, or upon the left recurrent nerve. Krause[3] has recently published experiments which prove that the recurrent nerve contains centripetal as well as centrifugal fibres.

Three years ago it seemed to me that the experiments of Krause, Jeleneffy and others made it more than probable that the median position of the cords in these cases was due to laryngeal spasm caused by irritation from pressure upon the nerve trunks or centres. It certainly seemed very improbable, *a priori*, to think that pressure upon the recurrent nerve, which carries both abductor and adductor nerve filaments should select in so many cases the former for injury. Knowing as we do that the abductors all over the body are the weakest, and that electric stimulation of the recurrent nerves causes contraction of both adductors and abductors, resulting in adduction of the vocal cords, we were prepared to give ready credence to Krause's theory, supported by his experiments, that pressure upon the recurrent nerve causes closure of the glottis by stimulation of all the nerve filaments rather than by paralysis of the abductor filaments alone.

Since then, also, Masini[4] has shown that crystals of chromic acid placed on the recurrent laryngeal nerve of a dog causes tension and immobility of the vocal cord of that side in the middle line. Fränkel and Gad,[5] on the other hand, had shown that gradual freezing of the recurrent laryngeal nerve, which we know decreases nerve irritability, causes also immobility of the vocal cord in the median position. Similarly contradictory are the experiments of Wagner[6] and Katzenstein.[7] The former showed that the median position of the vocal cords is due to the action of the crico-thyroid muscle, which he claims acts as an adductor of the vocal cords as well as a tensor, and being supplied by the superior laryngeal, is not affected by injury or disease of the recurrent laryngeal nerve.

Katzenstein's experiments, on the other hand, demonstrate quite as conclusively that this is not the case.

The most severe blow yet dealt experimentally to Krause's spasm theory with which I am familiar, is contained in the recent work of Dionisio.[8] He very ingeniously adapted a thin rubber bag to the glottis of a dog, between the vocal cords, and by connection through a rubber tube with a graduated scale constructed a laryngeal manometer by which he could read the degree of compression exerted on the column of water by the abduction and adduction of the vocal cords. He noted the oscillations of the column of water during natural expiration and inspiration.

He then exerted gradual homogeneous and concentric pressure on the recurrent nerve.

He observed, "that according as the duration and intensity of the compression of the nerve increased, the inspiratory and expiratory oscillations of the manometric column decreased; moreover the latter was little by little lowered several centimeters." He then compared the results of electric stimulation with those of compression, and concluded that: "Gradual and continuous pressure exerted upon the inferior laryngeal nerve, in place of augmenting the force of adduction of the vocal cord diminishes it. The force with which the cord was adducted in consequence of the slightest electric stimulation of the nerve, just sufficient to cause a gentle contraction of all the muscles with a prevalence of the adductors over the abductors, is much superior to that which the same cord shows during compression of the nerve. From this it is permissible to conclude that adduction is not caused by spastic contraction due to pressure, because if it were, the vocal cord ought to show an adductor force superior to that which is shown in the slight movements of expiratory adduction, and not inferior to it as really happens."

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[1] New York Medical Journal, September 28, 1889.

[2] Die Laryngealer Storungen der Tabes Dorsalis. *H. Burger, Leiden*,

[3] Krause: Berl. Klin. Woch., No. 20, 1892, refers also to similar experiments by Burkhart.

[4] Masini: Archivii Ital [illegible] mro XI, 1891, fasc. 1.

[5] Frankel and Gad: Ce [illegible]

[6] Wagner: Virchow's [illegible]

[7] Katzenstein: Vircho [illegible] I. 1.

[8] Dionisio: Archivii It [illegible] 1, 1892.

Naturally it may be objected that in pathological compression from tumors and the like, the pressure is exerted very much more gradually than is practicable in experiments, and that some chronic inflammation may set up in the nerve which may *possibly* cause stimulation and not paralysis.

Moreover, the objection of reasoning from animals to man, or from one animal to another, is always to be considered. I do not urge these objections for more than they are worth, but it is unscientific to disregard even the slightest rational objection.

It seems, therefore, that we are thrown back again upon that very vague and unsatisfactory law laid down by Rosenbach and Semon, that there is a specific vulnerability in the nerve fibres supplying the posticus muscle. This, I must confess, seems very unsatisfactory because it is difficult of conception, and, as far as I know, without analogy elsewhere in nervous pathology. Of course, it is quite possible, in view of the conflicting experimental evidence, that the median position may be due to either cause.

In reading the literature of the subject I have been impressed with the belief that at least one point has been overlooked or not duly considered, viz.: In any case of median position of the vocal cords due to spastic contraction, practical paralysis of the posticus muscle must ultimately occur, for the inability of its fibres to effectively contract must soon cause muscular atony. After a comparatively short time, also, we must expect fixation of the joint, so that any subsequent atony of the adductors, or any subsequent complete annihilation of the function of the recurrent, will not result in the cord assuming the cadaveric position, as occurs where the injury to the nerve causes more prompt destruction of complete function.

Lately, this belief, founded upon experience elsewhere in the paralysis of joints, has been confirmed by the report of a case[9] in which, there being double posticus paralysis with dypsnœa, one recurrent laryngeal nerve was divided, with the idea that this would produce complete paralysis of the laryngeal muscles on one side, which would place that vocal cord in the cadaveric position and so allow room enough for respiration. To the surprise of every one, no change occurred after the operation. Although the reporter offered no explanation, the one above suggested seems to me extremely probable.

Hence, in such a case as here reported, I believe that extirpation of the vocal cords would be a justifiable operation. It is one which has been satisfactorily performed in horses for "roaring," although the results have not been uniformly successful in regard to future service. The operation in the human patient, however, would be for the preservation of life without the discomfort and danger of wearing permanently a tracheotomy or an intubation tube.[10]

Discussion.

Dr. G. V. Wadlen, Indianapolis, in opening this discussion, expressed his pleasure in witnessing the tendency in the papers and current writings to accept the doctrine that there was no such thing as an organ or tonsil, having placed himself on record several years ago that there was no such thing anatomically speaking. He only wished to call attention to the causation and treatment of these growths, and their frequent diseased manifestations. Believing as he does that the catarrhal process originates always in childhood, and recognizing the poisonous nature of the secretion as taught in these papers he finds the reason for the fauces and especially the side of the fauces over which these secretions flowed to exhibit trouble was that nasal discharges are directed to these localities by the prominence of the posterior of soft palate. Therefore there being no such thing as a healthy tonsil, they show these various tendencies to disease and should be eradicated, and never by cauterization if it is possible otherwise.

Dr. Seiss, Philadelphia, thinks tonsils are definite physiological entities, as the glands occur in the lower animals, which never suffer from non-traumatic tonsillar enlargement. Denied that tonsils treated by galvano-puncture are apt to give subsequent trouble. Has seen many cases cured by this treatment. False membrane depends on intensity of irritant, occurs from steam scalds, the poison of influenza, etc. Pathogenic bacteria vary in malignant fever, and Jacobi taught years ago that a simple "follicular tonsillitis" may in another case set up "malignant diphtheria."

Dr. Jonathan Wright remarked:—There certainly are anatomical structures in the normal throat constantly from which the tonsillar hypertrophy follows. They are the folds of the mucous membrane supplied by a collection of muciparous glands. In these folds of mucous membrane there are lymphoid follicles, collections of round cells from which the tonsil afterwards grows.

Bayinsky, of Berlin, and Coucetti, in Italy, have lately demonstrated the Lœffler bacillus in the cases of nonsystemic croupous rhinitis. I am at sea in regard to the diagnosis between malignant (diphtheretic) and benign croupous rhinitis.

DOMESTIC CORRESPONDENCE.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

It is well established that the United States has within her borders many valuable and potent mineral springs; and every careful physician should endeavor to recall his experience and investigations with reference to the climate and medical typography and the therapeutic value of the mineral waters of his locality. With the desire to add my mite to this important subject—the therapeutical value of the mineral waters of our country, I respectfully submit the following:

PRACTICAL OBSERVATIONS ON THE MEDICINAL PROPERTIES OF THE MINERAL WATER OF COOPER'S WELL, HINDS CO., MISS.

In the month of September, 1892, I derived substantial benefit from the pure and bracing air, at an elevation of about 650 feet above the level of the sea, and the medicinal properties of the mineral water of Cooper's Well, Mississippi, after a prolonged illness in New Orleans, La.

The mineral water of Cooper's Well (situated about the geographical center of the State of Mississippi) is prompt and decided in its therapeutical effects, which may be classified as 1. Purgative; 2. Diuretic; 3. Diaphoretic; 4. Tonic Alterative and Restorative.

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[9] "Observation pour servir a l Étude de la Stenose laryngée néuropathique"—par le Dr. Albert Ruault, Archives lubrucations de laryngologie, No 1, 1892.

[10] I do not wish to offer this suggestion without stating that I have made no search in literature for any similar previous suggestion or even trial. A record of both, therefore, may exist.

1. *The Purgative effects* are due chiefly to *magnesium sulphate* (Epsom salts, about 24 grains per gallon); *Sodium sulphate*, (Glaubers salt, about 15 grains per gallon); and *Calcium sulphate* (about 32 grains per gallon).

2. *The Diaphoretic effects* are due mainly to the peculiar salts and to the *potassium sulphate* (about 6 grains to the gallon), *sodium chloride* (about 9 grains to the gallon); *Calcium chloride* (about 5 grains to the gallon); and *Magnesium chloride* (about 3½ grains per gallon of the water).

3. *The Diuretic effects* of the water must be referred to the action of the preceding salts upon the sudorific glands of the skin.

4. *The Alterative Tonic and Restorative effects* must be referred to, *a*. The peroxide of iron; *b*. The salts of calcium. And to the alterative effects of the salts of magnesium, sodium and potassium.

The combined effects of the saline ingredients, amounting to about 106 grains to the gallon (about one-fourth of an ounce per gallon), are manifest in the dark green copious evacuations from the bowels, the frequent and abundant excretions from the kidneys.

Both the liver and the kidneys are freely acted upon by the water, and at the same time the noxious abnormal products of the bile, torpid liver and deranged functions of the spleen, of the diseased and altered blood are eliminated by the gastro-intestinal mucous membrane.

The water of Cooper's Well, according to my personal observation and investigation, *will when used* under and by the direction of skilful physicians, prove highly beneficial in the following diseased states.

1. Anasarcan. 2. Ascites. 3. Alcoholism, acute. 4. Alcoholism, chronic. 5. Bright's disease. 6. Cardiac dropsy (valvular disease of heart). 7. Hepatic dropsy, arising from chronic hepatitis. 8. Renal dropsy, arising from lesions of kidneys. 9. Calculus (uric acid and oxalates and urates). 10. Jaundice, arising from hepatic derangements. 11. Jaundice, arising from the prolonged action of the malarial poison in the liver, spleen and blood. 12. Gout. 13. Rheumatic gout. 14. chronic malarial poisoning. 15 Rheumatism, chronic. 16. Diarrhœa, chronic. 17. Constipation, chronic. 18. Dyspepsia. 19. Nervous exhaustion, arising from various causes, as the prolonged action of febrile poisons, especially of the malarial poison; prolonged mental exertion, the prolonged heat of summer, the abuse of alcoholic stimulants and narcotics.

This water is contra-indicated in the *secondary diarrhœa* of *phthisis*, and in fact this disease (*consumption*) is not benefited, but rather injuriously affected by Cooper's Well water. However, phthisical patients may derive benefit from the elevation, cool climate, and pure, bracing air, and exercise over the beautiful hills and ravines, covered with lofty *long leaf pines*.—Respectfully yours,

JOSEPH JONES, M.D., LL.D.
Prof. Chemistry and Clinical Medicine,
Tulane University of Louisiana.

156 Washington Ave., New Orleans, Sept. 25, 1892.

BOOK REVIEWS.

A TEXT BOOK OF MORBID HISTOLOGY FOR STUDENTS AND PRACTITIONERS. By RUBERT BOYCE, M.D., with 130 colored illustrations. New York: D. Appleton & Co. 1892.

In this very excellent work the author without unnecessary verbiage gives a good account of the chief histological changes met with in disease. The arrangement of the subject matter is according to the method adopted by Prof. Horsley. The illustrations are micro-photographs, and ar exceptional as reproductions of the histologists' work of th author and others. As an aid to those who assist the ever day general practitioner in making accurate diagnosis o obscure diseases, this book is at once indispensable. Fo the student it is full of object lessons.

A PRACTICAL TREATISE ON DISEASES OF THE SKIN. By JOHN V. SHOEMAKER, A.M., M.D., Philadelphia. D. Appleton & Co, New York.

To those who know Dr. Shoemaker it is by no means surprising that this work upon diseases of the skin should be by far the most excellent that has yet appeared in America. It is fully up to date, well illustrated, and from a therapeutical standpoint is certainly irreproachable. Some of the pathological points are somewhat open to criticism, but not sufficiently so to detract greatly from the merit of the work. To the student of dermatology as a specialty, as well as to the general practitioner, this work will prove of great value.

GENITO-URINARY AND VENEREAL DISEASES. CHETWOOD.

This little volume is one of the students' quiz series in process of publication by Lea Brothers & Co. It is perhaps likely to be useful to the student during the cramming process preceding examination, but it is very apt to lead him into serious error if he remembers much of its teachings after entering practice. Quiz compends should contain few dogmatic assertions; this one is full of them. The statement is made, for example, that total extirpation of the involved glands prior to suppuration in chancroidal bubo, is not apt to prove successful. On the contrary, when properly done, it is quite often successful.

Another point worthy of attention is the absolute and unequivocal condemnation of the electrical treatment of stricture. There is a tendency to follow arbitrarily the teachings of Keyes. It may not be known to the author, but there are other authorities on genito-urinary diseases whose work is quite as reliable as that of the gentleman mentioned. Leaving out of the question the element of dogmatism, which is so paramount in this work, it is really an excellent little volume for the purpose for which it was designed.

OFFICIAL DISINFECTION SCIENTIFICALLY DIRECTED.—The medical profession has not a very lively admiration for the ordinary official disinfection and fumigation. While we do not, as a general rule, care to antagonize those operations, in the feeling that "they may possibly do some good"; neither do we care to very emphatically endorse them as matters of prime importance; we have become mildly agnostic in the matter. And this is chiefly because our rulers have seldom made provision that those official functions shall be under medical supervisions. Those acts have too often been done in a perfunctory manner.

The New York City officials have made a new departure, in those matters, that may serve to commend them again to medical confidence—after having driven it from them along with such men as Jacobi, Stephen Smith, Prudden, Janeway and many others. The Health Board has placed an expert bacteriologist in command of the disinfecting corps, and ten physicians will be employed under him, each of them having the oversight of a given district. Formerly the disinfecting was performed by laymen, sixteen or more in number. Dr. Herman M. Biggs, of the Carnegie Laboratory, will be the commandant of the somewhat fancifully entitled "division of pathology, bacteriology and disinfection"; and he will be known as the "bacteriologist-in-chief" with a salary of $3,000 per annum, or until some politician can put him out, after the cholera season is over. However that may be, the measure must be regarded as a wise one, and the appointment of Dr. Biggs as being in the interest of the public health. It gives dignity and prominence to official preventive work, elevating the "pot of brimstone" of the health officer to the position of a scientific symbol.

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SATURDAY, OCTOBER 8, 1892.

PROTECTIVE INOCULATION AGAINST CHOLERA.

The recent appearance of epidemic cholera in some parts of Europe has caused the publication, in various Continental medical journals, of many articles on the subject of acquired immunity to cholera as a result of protective inoculation of the ptomaine produced by the cholera vibrio. The subject is one of great interest in view of the high mortality of cholera, as well as the probability that this fall will not witness the extermination of the disease in Europe, and the spring of 1893 may, as has occurred in past epidemics, witness a renaissance of the present epidemic, that we are now informed is dying out.

In 1885 DR. JAIME FERRAN presented a paper to the French Academy of Sciences, in which he reported the results of experiments that showed that cultures of the cholera vibrio, injected subcutaneously in animals in suitable doses, produced certain local phenomena and rendered the animal immune to more virulent cultures of the vibrio, that would rapidly kill an animal that was not so protected. Similar mild injections in man produced phenomena analogous to those observed in the animals, and he inferred that if the latter were protected by these injections the former would also be protected. Subsequently this bacteriologist announced that it was the toxic product of the vibrio that produced the effects he had reported, because injections of cultures of the cholera vibrio in which the microörganisms had been killed, produced the same results as the cultures he had first employed. And still later he obtained an alkaloid from cultures of cholera that produced when injected similar effects to those he first published. A culture of the dead vibrio conferred a tolerance that resisted the effects of the living bacillus, and well-known methods isolated from cultures of the latter a ptomaine that produced a similar tolerance.

During the cholera epidemic of 1885 in Spain, FERRAN inoculated many persons with the protective culture of the vibrio, and the statistics of cholera occurring among uninoculated persons were 76.95 per 1,000, with a mortality of 33.58, while among the inoculated the attacks were 12.69 per 1,000, and the deaths 3.41. His methods were investigated by scientific commissions from several countries; but some of these investigators, while acknowledging the efficacy of the inoculations, condemned FERRAN for keeping secret his methods of preparing his inoculating fluid.

In 1888 GAMALEIA reported to the Paris Academy of Medicine that he had obtained from cultures of the cholera vibrio *a toxic substance that killed in* certain doses, but in smaller doses rendered an animal immune to choleraic inoculations.

More recently KLEMPERER has rendered animals immune to cholera by treating them with modified cultures of the cholera vibrio. He modified his cultures by keeping them at high temperatures for some days, or by passing a constant electric current through them for some hours.

HAFFKINE has also published a method by which he increases the virulence of the vibrio so that it will produce in animals symptoms that are similar to those produced by the disease in man; though an interesting fact is mentioned by him, that the symptoms in the animals do not appear for a few days, and occasionally the period has extended to two months. Like FERRAN, he cultivates the vibrio in guinea-pigs, and injects cultures of the vibrio under the skin, causing just such local phenomena as FERRAN noted, and rendering the animal immune against inoculations of cholera made in any way whatever. He attenuates this virus and uses it for protective inoculations in animals and in man. In the latter the symptoms are similar to those observed in the inoculations made by FERRAN. With these inoculations also, a second does not produce the constitutional or local phenomena observed with the first; and it is inferred that as the animals remain immune to cholera, so does a man who has been inoculated.

The inoculations are not attended with any grave disturbance of health; they can be practiced on human beings with perfect safety; and by a subsequent subcutaneous injection it is always possible to determine whether the immunity conferred by the first injection has persisted.

All later observers have confirmed FERRAN's original claim that the ptomaine produced by the cholera vibrio would, if administered to an animal in suitable doses, inhibit the subsequent production of cholera in that animal. So to him is due not only the credit of the discovery, but of applying it as a means of protection against cholera, and the statistics he published showed its efficacy for that purpose.

SCHOOL HOURS.

Among the many things of which the American people are justly proud, there is nothing that takes precedence of the public school system that is now quite general in almost, if not all, the States. In fact, the excellence of the common school is a valuable indicator of the moral and social status of any community. Hence, a belief is general, that a fair common school education for every boy and girl is the best possible preventive of vice, pauperism and crime.

With the spread of intelligence there is a consequent aggregation of people in cities and populous centres, and in the population centres the saying is trite that a disproportionate number of the leaders of enterprise, alike in commercial and professional pursuits is drawn from the men who received their early education in country schools.

The reason usually given for the country boy being able to overtake the one reared in a city, is, that he has had the benefit of unlimited out door exercise, which has developed him into a more hardy, enduring and robust man, all of which is no doubt true and is justly a prominent factor in the case, but another, and we regard it as a most important reason for his superior physical and mental development, is that the country school boy has had the benefit of better school hours. A sleep of nine or ten hours fits him for a hearty breakfast, home chores and three hours' study, the latter interrupted by a fifteen minute recess in which to take a run and in his own way relax and stretch his nerves and muscles. So that when the clock hands point to the noon hour he is downright hungry and ready to partake of a good wholesome picnic dinner, which he has brought with him from home.

This bounteous noon repast, seasoned with the sauce of repartee, takes from fifteen to twenty minutes of what seems to him to be the very best part of the day. The remainder of this noon hour is given up to play.

This noon hour, with its provident dinner, supplies the nutrient pabulum for recuperation and growth that more than aught else makes the muscle, nerve and bone which enables the country boy in later years to forge ahead of his fellow, whose studies during his school days have been a daily grind of five or six hours, almost wholly taken up with recitations, broken only by a fifteen or twenty minute recess, which is too frequently spent in efforts at catching up in some delinquent study.

After school recitation hours the city boy has dinner, or more properly a lunch all by himself. The indicator in his stomach has long since announced the hour, and not being gratified, a sense of listless weakness has taken the place of hunger, so that his eating is too frequently without relish. Then a little rest, not play, and he is at his books again, preparing for the morrow's recitations. Such is his round for five days in the week.

This method of feeding the developing boy and at the same time working him to the limit of his mental capacity is the stunting factor that in after life places him at a disadvantage with the noon fed boy of the country.

The adage that "an army marches and fights on its belly" is equally applicable to the growing boy and girl. They thrive and study best when their stomachs are fed the best, and this can only be accomplished by the noon feeding hour intermission, and a corresponding *regulation of study and recitation hours.*

This suggested change does not meet with the favor of teachers, mainly, we think, because it lengthens their limited working hours. This reason should have no weight whatever in the consideration of a subject of such vital importance as the one to which attention is directed.

QUARANTINE.

The fear of invasion by cholera has subsided and quarantine appliances to interior cities have been raised.

The disagreeable features of the latter were in many instances quite irritating and detrimental to commercial pursuits, but in almost all instances there was a good natured submission to the health authorities, which indicated a willingness to bear personal discomfort and inconvenience for the greater good that was to accrue to the public at large.

While the official authorities were in some cases criticised for apparent extravagance and harshness in their measures, the motive and purpose was *so* important as to be an apparent justification for the act. Commendable promptness was characteristic in every direction, and as a Nation we are to-day in a condition for congratulation that the menace which so seriously threatened our welfare has been so effectually stayed.

Some important lessons were learned by the people. First, that the science of medicine is alert and progressive, showing that it has, since the last visitation of cholera, discovered the method of infection by that disease, and also a rational means for its control.

Having made these discoveries and practically demonstrated their correctness, it will hereafter become an actually criminal act for any civilized government to permit of a spread of this highly infectious disease.

This occasion has taught that in order to an effectual protection of our American people, the National Government must assume the duties of coast, as well as interstate quarantine measures, and all State and municipal methods must be subservient to the control of the Nation's government officials. Furthermore, the American people have had their eyes widely opened to the enormity of the pauperism, imbecility and crime that is being transported in bulk to our shores.

This iniquitous business cannot be stopped by States or municipalities, but like an effective quarantine must be in the hands of and controlled to the extent of indefinite suspension by the National Government.

In this connection the report of SURGEON J. B. HAMILTON, of the U. S. Marine Hospital Service, on the recent quarantine at New York, published in our current issue, contains matter of great interest and value.

We now know enough to know that hereafter Nations should be held responsible for the existence and spread of this destroying disease.

Cholera can be as effectually eradicated as smallpox or typhus fever. Let every member of the American Medical Association take it upon himself to see that the Member of Congress representing his district is thoroughly informed on this subject. There is no possibility of his knowing too much about the dangers of wholesale ship and fleet loads of immigrant paupers, imbeciles and criminals with their accompaniments, including cholera.

THE FALSITY OF NOSTRUM DEALING.—The *Positive Medicator*, June, has formulated the following conclusions as the result of a very full knowledge of the ways and means of the patent-medicine vendors:

1. They claim to be specifics, which they are not.

2. The consumer pays an excessive price for a secret preparation when, were its formula know, the same preparation could be prepared and sold by his druggist at a reasonable figure.

2. Simple remedies are clouded in secrecy and sold as valuable new discoveries, which they are not.

4. Nostrums interfere with legitimate pharmacy, and being sold by dry goods bazaars, rob the pharmacist of his right alone to compound simple remedies for simple ailments.

5. Their selling value depends not upon their merit, but entirely upon their being pushed by advertising, which advertising in the end the consumer has to pay for.

6. There is no question but that the manner of advertising many nostrums is injurious to the public good. Ignorant people with slight illnesses are made to believe that they are in dangerous conditions and frightened into buying and consuming stuff which may not at all be suited to their cases, and which they use at an excessive cost to their pocket-books and general health.

From the above statement it will be seen that it is practically impossible for the nostrum-maker to say a true word in any of his published statements.

One ingenious calculator has figured out the cost of production of a dollar bottle of advertised medicine, and he has found that the utmost of drug-value that the manufacturer can afford to deliver to the sick person is ten cents. In other words, ninety cents out of the dollar, paid by the consumer, are necessarily absorbed by the proprietor, the wholesale druggist, the local dealer and the newspapers and other channels of spreading the lying claims of the nostrum, before the deluded patient receives his dime's worth of noxious liquid. And doubtless it is better for the patient that he gets that small return for his dollar, the less he gets for his money the better off he will be.

ERRATA.—In the issue of September 17, page 335, the heading of S. C. Ayers' article should read "Embolism of the Central Artery, *or* Thrombosis?" instead of *a* thrombosis.

THE ESTABLISHMENT OF A NATIONAL QUARANTINE STATION NEAR NEW YORK HARBOR.

BY JOHN B. HAMILTON, M.D., LL.D.,

SURGEON U. S. MARINE-HOSPITAL SERVICE, FORMERLY SUPERVISING SURGEON-GENERAL M.-H. S.

THE JOURNAL has secured a copy of Dr. Hamilton's report on the construction of "Camp Low." It is interesting from a sanitary point of view as being a report of the first camp constructed in the United States for cholera suspects, and the rapidity with which the work was accomplished was itself a feat worthy of notice.

REVENUE MARINE STEAMER "U. S. GRANT,"
OFF CAMP LOW, NEW JERSEY,
SEPT. 20, 1892.

THE HON. CHARLES FOSTER,
SECRETARY OF THE TREASURY, WASHINGTON:

Sir,—I have the honor to report the establishment, according to your orders, of the National Quarantine Station, "Camp Low," on the government reservation at Sandy Hook.

RAISON D'ETRE.

The reason for the existence for this establishment was the presence in New York harbor of several vessels infected with Asiatic cholera, having on board a very large number of passengers exposed to the danger of infection, and for whom the provisions made by the health authorities of the State of New York were entirely inadequate. In particular, the passengers from the steamer "Normania," of the Hamburg-American line, were in quarantine for several days, and each day members of the crew were taken sick with cholera. These passengers being detained on board, were constantly subjected, on the one hand, to the terrors of Asiatic cholera, and the hardships of rigorous confinement on the other. Although detained in quarantine, these passengers, most of them American citizens, managed to communicate their unfortunate condition to the public; and American sympathy, always responsive to human suffering, was quick to heed. The Government undertook to supply the deficiencies of the local quarantine at New York, and by your direction I examined the New York quarantine stations at Hoffman's and Swinburne's Islands, and found that Hoffman's Island, the only station to which persons from infected vessels could be removed, was crowded with detained emigrants; that no more could be accommodated, and that no provisions whatever had been made for cabin passengers. More than ten thousand steerage from European ports infected with Asiatic cholera were either on their way or were booked for passage, and ships recently arrived had lost many on the voyage. Under the stress of this menace the Government had no alternative, and by your further direction, I next inquired what measures of precaution could be undertaken by the Government to aid the State of New York in what threatened to become one of the most calamitous years of the Republic, in averting the prospective invasion.

You placed the U. S. revenue steamer, "Grant," Capt. Thos. S. Smyth, at my disposal, and her officers rendered most valuable coöperation. In examining New York Bay and vicinage, in company with Medical Director Gihon, U. S. Navy, and Dr. John H. Rauch, it was seen that Horse-shoe Cove, off Sandy Hook, afforded a perfect anchorage for vessels, and the land opposite being a Government reservation, and no important village or settlement near, afforded an eligible site on which to establish a quarantine camp, at once easy of access and easy to guard. Fortunately, the old wharf of the New Jersey Central R.R., on which was built a warehouse, was in an excellent state of preservation, and in such condition that it could be easily made the initial point for the new buildings, on which the location of the proposed camp can be seen.

THE CONSTRUCTION OF THE CAMP.

On Friday, Sept. 9, 1892, the steamer "Grant" anchored in Horse-shoe Cove, and with Lieut. Levis and the ship's carpenter, U. S. R. M., measurements of the wharf and buildings were taken. That evening you accepted the proposal of Mr. Austin Corbin, president of the Long Island Railroad, to build the necessary buildings according to my suggestions. That night I spent in writing memorandum requisitions for supplies, and the next morning a force of 150 carpenters, under the direction of Mr. C. M. Jacobs, C. E., and Mr. Cummings, were on the ground, and the buildings were erected with surprising rapidity. These comprised a large dining hall, with a capacity of seating 500 persons; a storeroom for the commissariat; a kitchen; three pavilions; a telegraph office; a baggage-room; a hospital; a laundry; a building for the dynamo; Surgeon Commandant's office; quarters for the correspondents. The railway tracks between the pavilions were of great use, not only in the construction of the Camp, but afterwards in its administrative functions. Over four hundred thousand feet of lumber were used in the construction of the buildings, and they were completed on Saturday morning, September 17.

The dimensions of the buildings were as follows:

Pavilion A	18x343 feet.
Apartments	South 47 feet. North 47 feet. Total, 94 rooms.
Pavilion B	13x313 feet.
Apartments	48 single.
Pavilion C	16x330 feet.
Apartments	South 44 feet. North 23 feet. Total, 63 rooms.

Making a total of 209 staterooms.

Telegraph Office	13x25 feet.
Press Office	10x40 and kitchen 10x13 feet.
Laundry Building	13x64 feet.
Dining Hall	34x96 feet.
Electric Light Building	12x28 feet.
Baggage Room	36x60 feet.
Commissary Building	18x36 feet.
Pantry and Kitchen	27x35 ft.; extra kitchen, 12x23 ft.
Surgeon-Commandant's Room	13x30 feet.

In addition to the foregoing there were 3,006 feet of sidewalk laid; 4 water closets made; 58 latrines built; 100 tent floors 12x14, and 200 tent floors 10x12 feet were made ready to be placed in position.

On Sunday, September 11, 400 wall tents, previously shipped by the War Department, were set up by the United States Artillery from Fort Hamilton by order of Maj. General O. O. Howard, and speedy provision was made for the early occupancy of the Camp.

After the rush of construction was over, a few carpenters were retained to extend the pavilions. By this means it was intended to do away with the necessity for many tents.

WATER SUPPLY.

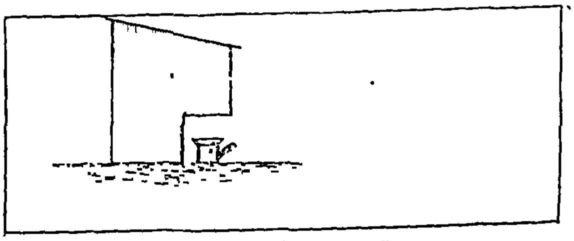
Abundance of fresh water is obtained on the Hook by driven well, and the old railway tank was utilized as a source of pressure, and water was piped to the various buildings.

MACHINERY.

Mr. Corbin caused the electric light plant formerly used at Rockaway Beach to be removed and put in position; and after the third night the work of construction was carried on at night by its aid. This has since been used for lighting the Camp. A steam pump was placed at the old tank house to keep up the supply of water in the tank, and another pump was placed near the dynamo on the wharf and supplied with 500 feet of hose, with sea water connection, to be used in case of fire. I made a contract with the Troy Laundry Co., of New York, to furnish and place in position ready for running, a laundry plant capable of washing for 500 persons a day. This machinery comprised stationary tubs, an engine, two washing machines, a centrifugal wringer, a mangle and drying racks. This was completed according to contract within forty-eight hours, by the men working night and day.

LATRINES.

In a Camp intended to contain suspects from ships infected with the Asiatic cholera, the construction of the latrines and their subsequent management are points of the first importance, for as is well known, the surveillance of persons suspected of cholera must include a watch of the frequency of their bowel movements. In the plan which was finally adopted, I availed myself of the advice of my friend, Lt. Col. Geo. M. Sternberg, Surgeon U. S. Army, and a delegation from a Committee of the New York Academy of Medicine, consisting of Drs. Loomis, Stephen Smith, Jacobi, Janeway and Allen McLane Hamilton. It was urged by Dr. Jacobi that the use of earth closets or chambers in the staterooms would make it impossible to ascertain quickly what person in the camp was suffering from diarrhœa, a point which only needed to be stated to be self-evident; therefore latrines were constructed in such a way that the dejecta was received into a pail, and the little houses themselves placed between the rows of corridors and tents in such a position that the patrolman could easily keep them under observation.



Section of Latrine, Camp Low.

Galvanized iron pails of a capacity of two gallons were provided to receive the dejecta, and milk of lime was ladled into these pails by the patrolmen, who were instructed to systematically inspect them while on their beat. At the same time they were instructed to report to office any person making the second trip to the latrine from his stateroom or tent. Other attendants were directed to mop the seats twice a day with bichloride of mercury solution.

HOSPITAL.

The hospital was constructed in more careful finish than the barracks and was intended for persons falling sick or being injured while in camp. Cholera patients, when found, were removed to and kept in tents near the hospital, and isolated from the remainder of the camp.

PATROL.

To prevent straying of the detained persons, the Honorable Secretary of the Navy, directed the detail of 211 marines under the command of Major Huntington, who drew a complete cordon sanitaire at a safe distance from the camp and maintained a regular patrol. This arduous duty, necessary for this temporary camp, which involved considerable hardship upon the officers and men of Major Huntington's command, could readily be obviated if the Government shall finally conclude to establish a permanent station, by the erection of a brick wall and the dredging of an inner moat.

SEA PATROL.

The sea patrol was a matter of much less difficulty, and, for the first few days, was performed by the steamer "Grant," Capt. Thos. S. Smyth, which officer also detailed Chief Engineer F. H. Pulsifer to aid in making his first purchases, and in various other ways aided in the construction of the camp. The Hon. B. F. Tracy, Secretary of the Navy, detailed the Monitor "Nantucket," Captain Book, with two steam launches to continue the sea patrol and relieve the "Grant."

THE EXECUTIVE FORCE.

At first I was the only officer, but when the Camp commenced to receive refugees turned over by the health officer of New York, the force consisted of myself as Surgeon-Commandant of the camp, Surgeon W. H. H. Hutton, M. H. S.; Passed Assistant Surgeons Wasdin and Stoner, and Hospital Stewards Rœhrig and Stearns. At my earnest solicitation the veteran sanitarian John H. Rauch, M.D., consented to remain as sanitary adviser and cholera expert. The remainder of the force consisted of cooks, carpenters, one plumber, and about forty-five laborers. These were employed in continuing the barrack extension and policing the camp. At first we were short-handed and attempted the employment of refugees, but it was found that they could neither be kept at work nor could they be made efficient. Ten sailors uniformed were therefore engaged as an additional force and were employed exclusively in sanitary work. My experience has shown that sailors are better disciplined and can be kept on such duty much better than the ordinary laborers. Mr. Nimmo, an interpreter and medical student, was made the foreman of the disinfecting corps. It was from the first deemed necessary to have female attendants to look after the welfare of the female refugees, and perform such other duties as might be required of them, and Mrs. Dunkinson, of Geneva, New York, was given supervision of their duties. Surgeon Henry W. Sawtelle relieved Surgeon Hutton, and I turned over the command of the camp to him September 22, 1892.

AERATION.

It is well known that aeration is one of the most effective means of disinfection, and for that purpose 2,000 ft. of clothes line was placed in position to enable refugees to ærate their baggage.

SUPPLIES.

The first supplies for the camp were received by the New Jersey Central R. R., but the local health authorities of New Jersey threw such obstacles in the way of trains as to make it impossible to obtain supplies with regularity or certainty. The steam tug "Talisman," Capt. C. H. Winette, was chartered, to be entirely at the service of the commanding officer of the camp, and make such trips to New York City as should be deemed desirable. Lieut. Wm. J. Herring, U. S. R. M., of the Str. "Chandler," whose headquarters were near the barge office, kindly consented to purchase miscellaneous supplies, and this officer is entitled to the highest commendation for the faithfulness with which he performed this extra duty.

GENERAL.

Should the Government at any time take this for a permanent station, a wall directly across the Hook to the Atlantic, marking the east and west boundaries of the quarantine, would not only obviate the necessity of a military guard, but would allow persons detained to go through the cedar grove back of the camp, and thus add materially to their facilities for recreation while undergoing detention.

The barracks could be weatherboarded and plastered, and heated by steam when necessary. A crematory should be built in the vicinity of the hospital. No isolation ward is necessary, as tents with flies, properly floored and heated by stoves, are better managed than isolation wards, which with every precaution are likely to themselves become centers of infection.

It is obvious that the establishment of this camp met a necessity arising from the great number of immigrants from infected ports massed in the harbor of New York; without it great hardship and greater loss of life must have inevitably resulted, not only among the unfortunate immigrants but in cities and towns near by as well as those remote from New York. The officers engaged in the work have entered upon it with great public spirit, fully imbued with the intention, at whatever risk to themselves, to spare no effort in protecting the country against a great calamity, and I am safe in predicting the final report of the Surgeon-Commandant will show the superiority of National methods in which the whole country have an interested voice, over those which formerly obtained.

There is no question of the power of Congress to legislate in the matter of National quarantines, and it is no argument against the exercise of that power to show that heretofore Congress has only undertaken to supply the deficiencies of State quarantines. Congress has not formally relinquished its power, nor could it do so; it has only failed to use it. When a fringe of States along the Atlantic seaboard comprised almost the whole of the United States, the necessities were different from the present conditions, when the center of population has been removed to the Mississippi Valley. It is inconceivable that one State alone should continue to conduct protective measures, according to its own methods, without regard to the wishes of other States, when all have common interests and are mutually interdependent.

But even more than economical considerations or convenient administration is the great relief to those poor suffering people, huddled together on a ship lying at anchor. They have nothing to fear more deadly than the fatal "crowd poison." Close quarters at sea may be made endurable by the forced ventilation, but lying at anchor the steerage air soon becomes stagnant and poisonous.

I am, sir, very respectfully, your obedient servant,

JOHN B. HAMILTON,
Surgeon U. S. M. H. S.

THE Court of Appeals of Kentucky has recently decided that syphilis, pleaded in answer to an action to recover damages for breach of promise of marriage, is a complete defence, following the decision of the Supreme Court of the State of North Carolina, in which the same defence was interposed and sustained in a similar action.—*Weekly Medical Review.*

DR. JENKINS, health officer at New York, and Dr. Wm. Randle, surgeon of the port of Philadelphia, are both from Mississippi.

SELECTIONS.

The Conical Corky Spines of Zanthoxylum.—The "Annals of Botany" for July contains an interesting paper by Mr. C. A. Barber, B.A. (Superintendent of the Agricultural Department of the Leeward Islands), on the corky spines of *Zanthoxylum*. The author traces the development of the corky spines of *Z.alatum*, as observed in fresh material supplied by the authorities at Kew. The corky cone appears to rise first as a sort of cushion beneath the thorn. In the earliest stage of its growth it is assisted by a lysigenous gland, which is found at its base. The tissue of this gland is differentiated by the formation of a small area of cells with granular contents, around which the neighboring cells become arranged concentrically, and the number of cells between the vascular ring and the epidermis becomes increased. In a more advanced stage, the cells on each side of the gland become collenchymatous, and the thorn becomes prominent, its cells elongating in the direction of its length. The cells outside the collenchyma then divide and form a meristematic layer at the base of the thorn, the cells nearer its apex becoming rapidly elongated, pitted and thick-walled. The change takes place more rapidly at the surface of the thorn, so that a hard tissue is formed around a softer core.

In the autumn the meristematic cells become sharply marked off from the underlying cells of the cortex, and are much shorter and more closely packed than before, assuming and retaining a brick-shaped character, rapidly taking the appearance of corky tissue, and exhibiting rings of growth in the stem of *Pinus*. By the rapid increase of growth of the lower part of the thorn, after the capacity for growth in the epidermal cells has diminished, the tissues around the base of the thorn are ruptured by the tension, and the corky cushion of the thorn becomes evident. The hardened or upper portion of the thorn soon shows at its base a line of separation, caused by a difference of form and the manner of thickening of the cells in its upper and lower part. A split across the top of the cushion and between it and the base of the spiny portion is thus formed. The latter ultimately separates from its corky base and leaves a scar, or causes a truncated appearance on the top of the corky cushion. In rare cases the spiny portion or part of it may still be seen adhering to the top of the corky cushion. Mr. Barber appends to his paper a list of plants, the thorns of which have basal cork formation. This list includes plants belonging to the *Malvaceæ*, *Rutaceæ*, *Simarubeæ*. *Rhamnaceæ*, *Leguminosæ*, *Rosaceæ*, *Araliaceæ*, *Cactaceæ*, and *Euphorbiaceæ*.—*Phar. Jour. and Trans.*, Aug. 6, 1892, p. 108.

MISCELLANY.

At the recent meeting of the American Orthopedic Association the following officers were elected to serve for the ensuing year: President—Dr. A. J. Steele, St. Louis; Vice-Presidents—Dr. Samuel Ketch, New York; Dr. Arthur J. Gillette, St. Paul; Treasurer—Dr. A. B. Judson, New York; Secretary—Dr. John Ridlon, 34 Washington St., Chicago.

Dr. W. S. Christopher, Professor of Diseases of Children in the Chicago Policlinic, has also been appointed Professor of Diseases of Children in the College of Physicians and Surgeons of Chicago.

Dr. W. C. Wile, editor of the *New England Medical Monthly*, was elected Surgeon-General of the Grand Army of the Republic at the annual encampment of that organization in Washington in September.

Meeting of International Medical Congress (American Public Health Association), in the City of Mexico, November 29th and 30th and December 1st and 2nd, 1892. For the convenience of delegates, and all physicians with their families, who desire to attend this meeting, an elegant Pullman car will leave Chicago November 19th. Short stops will be made at all points of interest between Chicago and the City of Mexico. For further information, maps, time tables, etc., address John E. Ennis, D. P. A., Mo. Pac. Ry., 199 Clark street, Chicago, Ill.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from September 24, 1892, to September 30, 1892.

Capt. William Stephenson, Asst. Surgeon U. S. A., is relieved from duty at Ft. Porter, N. Y., and ordered to Boise Bks., Idaho.

Capt. Eugene L. Swift, Asst. Surgeon U. S. A., promoted Captain, to date from August 12, 1892.

First Lieut. S. R. Dunlop, Asst. Surgeon U. S. A., is granted leave of absence for one month, with permission to apply for an extension of one month. Par. 2, S. O. 99, Hdqrs. Dept. of Texas, San Antonio, Tex., September 20, 1892.

First Lieut. Wm. F. Lippit, Asst. Surgeon, will proceed from Camp Eagle Pass to Camp Pena Colorado, Tex., and report to the commanding officer for temporary duty. Par. 3, S. O. 29, Hdqrs. Dept. of Texas, San Antonio, Texas, September 20, 1892.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Five Weeks Ending September 24, 1892.

Surgeon W. H. H. Hutton, to proceed to Cape Charles Quarantine for special duty. August 27, 1892. To proceed to Sandy Hook, N. J., for special duty, September 10, 1892. Relieved September 16, 1892.

Surgeon John B. Hamilton, to report in Washington, D. C., for special temporary duty. September 2, 1892.

Surgeon H. W. Sawtelle, detached for special duty as quarantine inspector, Canadian frontier, September 5, 1892. To proceed to Sandy Hook, N. J., for special duty. September 16, 1892.

Surgeon G. W. Stoner, detailed for special duty as quarantine inspector, Michigan ports. September 3, 1892.

Surgeon F. W. Mead, to proceed to Baltimore, Md., on special duty. September 24, 1892.

P. A. Surgeon C. E. Banks, to proceed to Washington, D. C., for special duty, August 26, 1892. To rejoin station September 8, 1892. To proceed to Washington. D. C., for special duty, September 22, 1892.

P. A. Surgeon S. C. Devan, to proceed to Delaware Breakwater Quarantine for special duty, August 28, 1892.

P. A. Surgeon P. C. Kalloch, to proceed to Portland, Me., for temporary duty, August 26, 1892. Detailed for special duty as quarantine inspector Maine ports, September 8, 1892. To proceed to Washington, D. C., for special duty, September 15, 1892. To proceed to Portland, Me., for temporary duty. September 22, 1892.

P. A. Surgeon Eugene Wasdin, to proceed to Sandy Hook, N. J., for special duty, September 13, 1892.

P. A. Surgeon J H. White, to proceed to Way Cross, Ga., for special duty. September 19, 1892.

P. A. Surgeon J. J. Kinyoun, to proceed to Baltimore, Md., on special duty, August 27, 1892. To proceed to Philadelphia, Pa., on special duty, September 1892. To proceed to New York, N. Y., on special duty. September 21, 1892.

P. A. Surgeon J. O. Cobb, to proceed to Sandy Hook, N. J., for special duty. September 19, 1892.

P. A. Surgeon J. B. Stoner, to proceed to Sandy Hook, N. J., for special duty. September 13, 1892.

P. A. Surgeon C. P. Wertenbaker, to rejoin station (Chicago), August 28, 1892.

Asst. Surgeon J. C. Perry, to proceed to Norfolk, Va., for temporary duty, August 27, 1892. To proceed to Cape Charles Quarantine for special duty. September 8, 1892.

Asst. Surgeon W. G. Stimpson, to proceed to Delaware Breakwater Quarantine for special duty. September 2, 1892.

Asst. Surgeon A. J. Rosenau, to proceed to Cape Charles Quarantine for special duty. September 10, 1892.

Asst. Surgeon L. E. Cofer, granted leave of absence for sixty days on account of sickness. September 2, 1892.

Asst. Surgeon W. J. S. Stewart, to proceed to Charleston, S. C., for temporary duty, August 26, 1892. To rejoin station (New York), September 2, 1892.

Asst. Surgeon Edgar Strayer, assigned to temporary duty at Boston, Mass., September 6, 1892.

PROMOTIONS.

Geddings, H. D., commissioned as P. A. Surgeon September 2, 1892.

Wertenbaker, C. P., commissioned as P. A. Surgeon September 2, 1892.

APPOINTMENT.

Strayer, Edgar, M.D., of Pennsylvania, commissioned as Asst. Surgeon September 2, 1892.

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ORIGINAL ARTICLES.

KUMYSS—ITS VALUE AS A FOOD AND RECONSTRUCTIVE.

Read in the Section of Physiology and Dietetics, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY J. MOUNT BLEYER, M.D.,
SURGEON TO THE NEW YORK NOSE AND THROAT INFIRMARY, AND EDITOR ELECTRICAL REVIEW.

My object in bringing this paper before you, is to call your attention to the valuable dietetic properties of kumyss and to give you the results of my experience with a new kumyss preparation, called "Kumyssgen" (a kumyss in a dry form).

HISTORICAL SKETCH.

From time immemorial the Nomad tribes of Southern and Eastern Russia and Central Asia, have prepared and used kumyss. Herodotus gives an account of it as used by the Scythians, Virgil sings of a tribe who drank it. Perhaps, the first mention of it by name, may be found in "Ipatof Annals" published at St. Petersburg in 1871. In 1182, Prince Igor Seversky was taken prisoner by the Polobtsy and the captors got so drunk on kumyss that they allowed their prisoner to escape. The old monk and traveller Wm. de Rubruquis, in the thirteenth century, was the first one who wrote a distinct and admirable account about kumyss and its action, its taste and preparation. He says: "The same evening the guide who conducted us, gave us some *cosmos* (which he call the drink). After I had drank it, I sweat most extremely from the dread and novelty, because I never drank it before. Notwithstanding I thought it very savory and indeed it was." And in another part of his travels, he thus refers to it: "Then they, the Tartars, tasted it and being pretty sharp, they drank it, for it biteth a man's tongue like wine of raspberries, when it is drunk. After a man has taken a draught thereof, it leaveth behind it a taste like that of almond milk, and it maketh one's inside feel very comfortable, it also intoxicates weak heads." The next writer to refer to kumyss, is Marco Polo, the Venetian, in his "De Regionibus Orientals." "Their drink is mare's milk prepared in such a way, that you would take it for a white wine, and a right good drink it is,called by them '*Kemiz*'."

For nearly 500 years after these old travelers wrote, no mention of kumyss, so far as I am aware, is to be met with in European literature, and it is only towards the end of the eigthteenth century, that it is again brought into notice. Thus Strahlenberg was the first, after de Rubruguis, to give a description of the preparations of kumyss, but his method, although borrowed from and said to have practiced by the Kalmucks, seems to have been unsuccessful. Neumann, a German, and Voltenlau, a Dutch chemist, proved equally unsuccessful in their attempts to explain the nature and causes of fermentation in mare's milk. Pollas while mentioning kumyss, in his travels, also states that the Tartars, during winter,when mare's milk fails them,prepare a wine from cow's milk. Gmelin gives an account of the distillation by the Nomads of a spirit from milk, while Oxeretkowsky in 1778, sent a graduation thesis to the Academy at St. Petersburg. (These last two writers wrote only about the spirit obtained from kumyss, and not about kumyss itself.) All these travelers and authors spoken of, considered kumyss to be simply the intoxicating beverage of said Nomad tribes. No one appears to have been impressed by its remarkable nutritive qualities, since no one seems to have regarded it in the light of a food. The credit of being the first to estimate the importance of kumyss as an article of diet, and of discovering its uses, as a therapeutic remedy, belongs to Dr. John Grieve, a surgeon, one of the many Scotchman who have, from time to time entered the Russian service, and who in 1784, wrote a communication to the Royal Society of Edenburgh, entitled, "An account of the method of making a wine, called by the Tartars, kumyss, with observations on its usage in medicine." And he thought that "With the superaddition of a fermented spirit, it might be of essential service, in all those disorders where the body is defective either in nourishment or strength." And he further proved the benefit of the milk wine on three patients, two of whom were consumptives, sending them to the steppes among the Tartars, from where they returned stout and in perfect health. After the return of these first patients, sent to Tartary, Grieve commenced making kumyss himself.

At the beginning of the present century Dr. Haeberlin gave an excellent description of kumyss; he being a consumptive, tried its therapeutical effects on himself for 13 long years. From the year 1811, when Haeberlin's communication was posthumously published, until the year 1857, several treatises on kumyss are to be found scattered through various Russian and German periodicals, lay and medical.

But in 1858, Dr. Postikof started an establishment for the cure of diseases, by fermented mare's milk, at Samara, in Eastern Russia, and a similar establishment about 45 miles distant, was started by the late Dr. Tchembulatof, both of which have been extremely well patronized by patients from all over the world. So successful were they, that the Russian government, in 1870, started a place of their own for the cure of sick soldiers, belonging to the Kazan district. Here were provided 120 beds, and at this little hospital, the surgeons began their experiments with the kumyss cure, which proved thoroughly successful. Various diseases were treated and the hospital was still in existence after ten years' trial.

The first persons to test the value of kumyss in hospital practice, were Dr. Neftel, who in 1859 treated 15 soldiers with it, in the Orenborg Military Hospital, and Dr. Zéland, who in 1861 accompanied a party of phthisical soldiers sent by the Russian War Office, to drink fermented mare's milk in the Bashir Steppes. Both of these surgeons spoke highly of kumyss, in the admirable essays published by them on the subject.

In ending this imperfect sketch of the history of kumyss, a few words in regard to its literature, during the last few years, may not be out of place. From 1858 to the present day, several excellent pamphlets and articles were published on kumyss, embodying the experience of those who had been in the steppes, and who had carefully and dispassionately investigated its action in disease, and it is a fact that since John Grieve's time, not a single medical author, practically acquainted with kumyss, has failed to give it full praise, as the best known remedy and reconstructive agent, in all wasting diseases. The writings of Drs. Grieve, Haeberlin, Homenko, Dahl, Maydell, Ucke, Stahlberg, etc., etc., bear witness to what has been stated, and display in their praises of kumyss, a unanimity of opinion quite exceptional in the history of therapeutic remedies. In a few rare instances, where we find kumyss disparagingly spoken of, it is by authors who had no practical knowledge of its uses.

KUMYSS PREPARATIONS.

The curative properties of mare's milk induced physicians and chemists to try cow's milk, which is so much easier to procure, for making kumyss. It was successfully tried and a new food and drink was given to the civilized world. Dr. Jageliski says, "I consider cow's milk an equally good raw material, if not better than mare's milk for the preparation of kumyss;" while Dr. Landowski regards the richness of cow's milk as advantageous when compared with mare's, to the invalid, who absorbs a larger quantity of nutritive material; then came a preparation, made by fermenting a mixture of cow's and asses milk, which made an excellent substitute for kumyss, and a new name was coined for it, which may be applied to all fermenting milk, "Galazyma,"taken from the Greek. For particulars, I would refer you to a little work, by Dr. B. Schnepp, of Eaux Bonnes, entitled "Traitment efficace par le Galazmye des effections catarrhales, de la phthsic et des consumptions en general, Paris, 1865."

I will not dwell on the methods of the manufacture of kumyss, as it can now readily be obtained prepared for use; in fact, I would advise against its preparation in the household, or by the physician. The operation is a delicate one, it requires special knowledge and appliances for regulating temperature, etc. The new preparation, "kumyssgen," being in the form of a dry powder, can be sent everywhere, and the preparation of an excellent kumyss from it is a very simple matter.

The milk of various animals is made use of, besides that of the cow, namely: the goat, the ass, sheep, camel and mare. Milk is used as it is drawn, or in the form of whey or curdled. Ghee is a favorite beverage throughout all India. It is a stale butter, clarified by boiling and straining. When it is set aside to cool, it remains in a semi-liquid or oily state, and is used as a drink and in cooking by the natives. In milk-beer, milk is substituted for water. Kef-is a kind of effervescing fermented milk, resembling kumyss, which is made at Samara. Yamanet is a favorite drink in Constantinople, made by curdling milk in a peculiar manner. Syra is a sour whey used as a drink like small beer in Norway and Iceland. Aizen and liban, both forms of kumyss, are made one by the Tartars, the other by the Arabs. Kefir is another fermented beverage, prepared in the mountains of the Caucasus from cow's milk. This fermentation process is brought about by a micro-organism, the Dispora Caucausica, which is added to the milk; it possesses the property of converting the milk sugar into alcohol, carbonic acid and lactic acid.

WHAT KUMYSS IS.

We know that kumyss is a highly effervescent, slightly acidulous beverage, made from milk by a peculiar process of fermentation. It contains the casein, the most nutritious element of milk, in a form in which it can be much more readily digested and assimilated.

The principal changes which milk undergoes, when converted into kumyss, are: the milk sugar is partly converted into lactic acid, carbonic acid and alcohol, the albuminoids are partially peptonized, and the remainder separated into such a finely divided state that the digestive fluids can readily act on them. As the above changes are constantly going on in kumyss, we can readily see that it is not at all stable, that its composition is constantly changing.

While in the first stage, when still somewhat sweet and only gently effervescent, it is called *mild kumyss*, similar to kumyss made from kumyssgen, when freshly prepared. This, in the course of a few days, passes into the *strong kumyss*, decidedly acid and highly effervescent. While in the intermediate state it is called *medium kumyss*. All these conditions are under perfect control by the use of kumyssgen.

Kumyss when taken in large doses, should not be administered too cold. Except in cases of severe and uncontrollable vomiting, it should be given with the chill off, and will then be found very easy to digest. This point I want to impress on you, particularly when used in pulmonary phthisis, where the consumption of large quantities of kumyss is required, and where the nearer the temperature of the ingested fluid approaches that of the blood, the sooner and easier will it be absorbed and digested. A temperature of about 60° Fahrenheit is found to be the best.

The next question is, in what quantities shall kumyss be taken? The first precaution to be observed is that the quantity should never exceed what the invalid's stomach can easily digest, and will also depend upon the disease for which kumyss has been prescribed. As a food, any quantity can be taken by a healthy individual.

Regarding the physiological action of kumyss and its many therapeutical applications, I must refer you to the literature on the subject, as the allotted time for the reading of this paper is limited.

Some of the therapeutical applications, both as a special addition to foods and as a reconstructive, which I have made with kumyssgen. We know that there are diets suited to every age, to every climate, to every species of work, physical and mental; there are diets by which diseases may be prevented and cured; diets beneficial to some constitutions and injurious to others; diets which make the skin glossy, the frame vigorous and the spirit joyous; others which mar the face with wrinkles, speckle the body with eruptions, and make the form sallow, lean and prematurely old.

When by successive researches, the science of diet, feeding and administration of proper reconstructives to patients, is better understood, without doubt a school of physicians will arise, discarding all drugs and treating disease by forbidding certain foods and by surfeiting with others; if indeed at the present time there is not, in the highest representatives of medicine, the nucleus of the future school of dietetics already formed.

Invalids! What thoughts does that word call into being; what pictures does the imagination construct. The whole world seems full of invalids; beings whose life is a burden to them, who would give their wealth to be relieved of their wretchedness, who would barter their knowledge and fame for the careless life of the healthy man.

We meet them in a dreary procession, here and across the continent of Europe, scattered up and down the sunny shores of the Mediterranean, steaming across the sea in pursuit of rest, camping on lonely spots to cheat their pain, all up and down the world, among the haunts of men, life taking its sad tinge from their heritage of weakness.

There are invalids who are such because they do not have enough food; there are those who are such because they have too much food; there are invalids who have made themselves such by improper diet; and there are invalids who are invalids because they will not eat proper food.

There is no doubt that improper food is often the cause of our ills and certain maladies—that much abused member of our body, the stomach, is often answerable for ill-temper, discontent, fretfulness, caprice and ennui, and yet if we listen to its admonitions, and heed its teachings, we should enjoy more peace and find more happiness in our lives.

The success of halt the water cures and health resorts is based on this fact, for they associate with their strictly medical treatment a strict dietetic regimen, plain, wholesome and temperate, and which is insisted on as part of the cure, knowing that the over-eating and drinking, during the city season, must be combated with the moderation of the holiday season. It is a very rational mode of treatment, and is the only one that will restore the balance. Far better would it be, if the need for cure did not exist, but such self-denial is too much to look for, in these enervating days.

In an article published by me, in the *Journal of Baneology and Dictary*, of March, 1892, entitled "Diet, Digestion and the Voice, etc.," I had occasion to thoroughly discuss this subject, giving my several years' experience in the treatment of the diseases of vocal organs in singers, actors, clergymen, lawyers and others, observing that diet played a chief part in their successful treatment. I have also spoken in detail in this article of a diet (a modification of the true vegetarian system), called by me "modified vegetarian," one which I adopt for various reasons explained therein. I prescribe this mode of living in all diseases of the nose, throat and the ear, and in all catarrhal forms of chest diseases, either simple or complicated, with Bright's or other forms of kidney diseases, in rheumatism, gout, dyspepsia, and stomach disorders of all kinds, in nervous diseases and in all degrees of alcoholism.

My modification of the mixed vegetarian system, consists in the utility of fats as an economiser of albuminoids, and I must say that a vegetarian diet, in which animal and vegetable fats enter freely, is a very much more complete food and likely to be very much more satisfactory, than one from which all animal fats, like butter, cream, milk and kumyss are excluded. Indeed vegetarianism with liberal allowance of fats of all kinds, has in my experience given by far the most satisfactory results, in such cases as gout, rheumatism and indeed in all dyspeptic disorders.

From my experience of several years' employment of this system in my practice, I do not consider that by this means we reduce the albuminoids too much. I can commend this modified form of vegetarian system, though its adoption must not be undertaken too suddenly, and must be done under the supervision of a physician.

When prescribing such a diet, I supply the albuminoids by using kumyssgen or kumyss and lean meats of all kinds, etc. The kumyss, I allow my patients to partake of as much as they desire to drink.

We know that most professional people, whom we are called upon to treat for affections of the nose, throat, etc., are accustomed to high living. We therefore often find in this class of people, old cases of dyspepsia, as well as an atonic state of the small and large intestines resulting therefrom, and I find that such cases are readily relieved by kumyss, with a modified diet. I have had patients whose digestion had for years been accompanied by extreme uneasiness or pain, and who are obliged to confine themselves to the simplest articles of food, which only half nourish their bodies. Soon after being placed on kumyss and a proper diet, the distressing symptoms disappear, their stomach after a time, regaining the power of digesting almost all foods.

In cases of scrofula, syphilis and anæmia where the blood is impoverished or poisoned or the tissues are undergoing rapid waste, there is nothing known that gives so much satisfaction, as kumyss combined with the remedies in use for the treatment of these affections. The combination of iron and kumyss gave me excellent results.

It was found that in all such cases, kumyss produced no specific action, but was simply the most digestable food that could be employed, with the view of improving the quality of the blood, and the nutrition of the body.

In the many operations which we are called upon to perform about the mouth, throat, etc., I know of no better food, that serves to keep the body above par during the healing process, than kumyss given "ad libatum." I find kumyss of special service after the operation of intubation of the larynx. In these cases, I am in the habit, where swallowing is interfered with, of feeding by a stomach tube, and the only food that I found thus far suitable, was kumyss. I would feed the patients on it from three to four times daily, giving the quantity indicated by the age.

In two cases of cancer of the œsophagus, the nutrition of the body was extremely low when the cases came into my hands for treatment, on account of a lack of nutritious food. These cases having the cancerous growth so situated, I intubed the œsophagus and through the opening thus made, kept up the nourishment of these patients by kumyss and a generous diet. Large quantities of kumyss were administered in this way. Their life beyond doubt, was prolonged for eight months, besides relieving them from the agonies of starvation, which is the usual end in such cases. I will cite one more important case from my record book, showing the importance of kumyss as a reconstructive.

A child two years old was suffering from a syphilitic tumor at the base of the interior of the epiglottis; the tumor involved the vault of the larynx, which necessitated a dangerous operation at that age. I intubed the child and by means of the stomach pump, fed it on kumyss for three months, until the action of the remedies employed for the treatment of this tumor, resulted in diminishing its size. The child recovered without much loss of weight.

Many other similar cases thus treated with kumyss, I could cite, and I would advise you all to give this valuable food a thorough trial. I can highly recommend its use, in all branches of medicine, as well as in my special cases. For additional points connected with special application of "diet" dietetics for all voice users, I must refer to my article cited above.

In conclusion I would say, that I have substituted kumyss, made from kumyssgen (the new dry form of kumyss) in all cases where I formerly employed liquid kumyss, and find it much superior in many respects, both in regard to convenience of handling and in the results obtained. It is uniform in composition and I find most patients will take it readily, which is not the case with the liquid kumyss.

LARYNGEAL TUBERCLE AND TUBERCULIN.

Read in the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY A. J. ERWIN, M.D.,
OF MANSFIELD, OHIO.

It is not the object of this paper to enter upon a general study of the treatment of laryngeal tubercle with tuberculin, or to summarize the published experience of others, but merely to give you a brief account of a few cases from my own clinic, and to make a few inferences from the same. During the past year I examined sixty-three cases of tuberculosis of the respiratory organs, and treated twenty-six of them with tuberculin. Of these twenty-six seven had disease of the larynx in addition to the lung disease, which was well-marked in each case, and in no case was there any indication of either inherited or acquired syphilis, viz.:

Case 1.—Wm. Brintenbucher, æt. 20; Londonville, Ohio. Cough began about January 1, 1891; had hæmorrhages April 15 and 16; fever and night-sweats daily; decreased in weight 20 pounds; consumption hereditary on both sides of family.

April 23, 1891, 4 P.M.—*Pulse,* 132; *respiration,* 30; *temperature,* 102. Cough frequent, some expectoration containing bacilli, râles and obstruction in the apex of the left lung, an ulcer on inner surface of left arytenoid cartilage, deep, and a quarter of an inch in diameter. Also a solid tubercle an eighth of an inch in diameter on the first trachial ring.

I treated him exclusively with tuberculin from April 23 to August 15, in all 54 injections from 1-20 to 1. minim each. The solid tubercle and the râles had entirely disappeared by May 20, but the ulcer on the arytenoid did not close until about the first of August. Some thickening remained for two months later, by which time his cough and expectoration had ceased, and he had increased twenty-nine pounds in weight. Up to this date there has not been any return of the disease in his throat, but since April first his lungs show evidence of increasing tubercularization. He has not returned for treatment.

Case 2.—Mrs. Jacob Miller, æt. 23; Mansfield, Ohio. Began to cough and have fever and night sweats in December, 1889; has had an occasional small hæmorrhage; appetite and digestion good; no loss of weight, consumption hereditary on one side.

March 28, 1891, 3 P.M.—Pulse, 100; respiration, 24; temperature, 101. Râles in apices of lungs, cough frequent. Free expectoration containing bacilli, anæmic, fever and sweats daily; tuberculous ulcer covering the inner surface of left arytenoid cartilage. She received 45 injections of tuberculin between March 28, and the following July 1, without producing any change in either lungs or throat for better or worse. She died of lung disease eight months later.

Case 3.—Mrs. George McMullen, æt. 25; Mansfield, Ohio. Cough and fever began December, 1890; has had two slight hæmorrhages; has decreased 20 pounds in weight; lung disease hereditary on both sides of family.

May 13, 1891, 4 P.M.—Pulse, 92; respiration, 22; temperature, 100. Râles throughout left lung; free expectoration. Sputum contains bacilli, cough frequent; left arytenoid a little thickened, not ulcerated; appetite and digestion poor. Began injections of tuberculin May 14, 1891. By June 1, entire anterior surface of left arytenoid had ulcerated with increased thickening of the cartilage. Treatment continued to July 21, in all 32 injections. When discontinued, the arytenoid thickening had considerably diminished, the ulcer was about half the former size. Left lung unchanged. Appetite and digestion improved. The fever and sweats had ceased by the middle of June; her weight had increased 5 pounds. There was no return of fever or sweating, nor increase of the lung, or laryngeal disease until March, last, since which date there has been a gradual increase of the lung and laryngeal lesions. The treatment has not been renewed.

Case 4.—Wm. Masky, æt. 30; Mansfield, Ohio. Cough, fever and sweats began with the grip November, 1889; has lost 27 pounds in weight; lung disease hereditary on one side of family.

May 18, 1891, 5 P.M.—Pulse, 120; respiration, 24; temperature, 101. Upper lobe of each lung obstructed; murmur very deficient; no râles; frequent cough; no expectoration; mucous from throat contains bacilli; anæmic and weakened. Larynx and trachia covered with miliary tubercles. I treated him with tuberculin from May 18 to July 1, without making any improvement on either throat or lungs. He died of pulmonary hæmorrhage three months later.

Case 5.—J. D. Tipton, æt. 26; Ashland, Ohio. Cough and fever began September. 1890; had frequent profuse hæmorrhages in April and May. Consumption hereditary on both sides of family.

May 25, 1891, 3 P.M.—Pulse, 128; respiration, 32; temperature 102. Obstruction and râles throughout the right lung, and in apex of left. Cough frequent, expectoration large; sputum contained bacilli. No disease of larynx. Began tuberculin injections May 26, 1891, which were continued daily at first, and semi-weekly afterwards to Aug. 6, from one-tenth to one minim each. About July 4 an ulcer opened on the right ary-epiglottic fold, and one on the inner surface of the left arytenoid, with considerable thickening. Last examination, Sept. 7, showed no improvement in either throat or lungs. Died Jan. 1, 1892.

Cass 6.—Frank Stevens, æt. 27; Carey, O. Cough and fever began spring of 1890; had several large hæmorrhages in June, 1891; lung disease not hereditary, although two brothers and sisters died of it.

Sept. 21, 1891, 3 P.M.—Pulse, 120; respiration, 24; temperature, 100. Râles and obstruction throughout right lung; superior lobe of left obstructed; miliary tuberculosis covering pharynx and larynx; free expectoration containing bacilli. Received tuberculin treatment for one month, in all 20 injections, without any improvement of throat or lungs. Died a few weeks later.

Case 7.—Mrs. A. Voeglir, æt. 28; Mansfield, Ohio. Cough, fever and night sweats began July, 1890; has lost 26 pounds in weight. No hæmorrhages; very weak and anæmic. Father and sisters died of consumption.

May 7, 1891, 4 P.M.—Pulse, 130; respiration, 30; temperature, 103. Obstruction and râles in apex of each lung, left arytenoid double as thick as the right, with deep ulcer covering anterior surface, from which pain extends to left ear; cough frequent, expectoration moderate; bacilli in sputum. Began treatment with tuberculin May 8, 1891. For the first month daily injections, beginning with one-tenth and reaching two minims each. By July 1 the obstruction and râles had disappeared from the lungs. September 5, the thickening had left the arytenoid, but the ulcer did not entirely heal until about Nov. 1, leaving some deformity of the cartilage. She passed the winter without return of fever, sweats or expectoration, and scarcely any cough, with a good appetite and good digestion, and fifteen pounds of increase of weight. In March last, she had an attack of the grip, which developed some râles in apex of right lung, and some infiltration of the previously diseased left arytenoid and fold extending to the epiglottis and slight fever. She returned to the tuberculin treatment, having an injection of from one to two minims twice per week. After about half a dozen injections the laryngeal infiltration disappeared without ulcerating, and the râles ceased in the lung a week or two later. She has now scarcely any cough or expectoration, and no bacilli with sputum. No fever, and fair health. Since September first, 1892, some disease in apices of lungs, with cough and expectoration, which is again improving under tuberculin injections, but no return of disease of larynx.

I believe that had Mr. Brintenbucher and Mrs. McMullen returned to the tuberculin treatment when the disease reappeared they would again have been relieved as readily as was Mrs. Voeglir.

In addition to these seven cases treated, I examined five others last summer who did not take the tuberculin but continued other treatment. Every one of them have since died. The inferences that might be drawn from this limited experience are, viz.:

1. Tuberculin will cure some cases of tubercular laryngitis, and will generally stop its progress.
2. The treatment must be continued much longer than is generally practiced to affect a cure.
3. Should there be subsequent renewal of the disease, the treatment should be repeated without delay.
4. It is only in the earlier stage of tuberculosis that the tuberculin treatment is likely to be successful.
5. Considered in connection with my experience in the treatment of lung disease with tuberculin, laryngeal tubercle is less amenable to the tuberculin treatment than is phthisis pulmonalis.

In answer to the inquiry as to the results of the tuberculin treatment in pulmonary tubercle, I would say, that of the twenty-six cases treated, more than one-half were too far advanced to expect any benefit, and yet of the whole number treated one year ago, five are now in good health (June 1, 1892), without any sign or symptom of tuberculosis, four were greatly improved, but relapsed during the past spring; two of them have since died without renewing the treatment, the other two returned to the tuberculin and have again improved and are in fair health. Seventeen were not improved by the treatment. In no case was there any bad effect from the injections. I made in all five hundred and twenty-two injections of tuberculin without causing one abscess, or one case of laryngitis.

THE PHYSIOLOGY AND PATHOLOGY OF THE TONSILS.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Lennox Brown says: "Of the primary value of these glands there is considerable doubt, but it is certain that at a very early age, and in the great majority of instances, they exist only to become diseased, so much so that a very eminent physician has stated that were he to play the part of a Frankenstein and endeavor to create a man, he would omit the tonsils."

The term tonsil is applied to the collection of so-called lymphoid tissue known as the faucial tonsil.

The tonsils are situated on each side of the fauces, between the anterior and posterior pillars of the soft palate. Gray says: "They are of a rounded form, and vary considerably in size in different individuals;" he does not give their size. Holden says: "The tonsil consists of an aggregation of muciparous glands." No mention is made of their size. Ellis and Ford say: "This body (the tonsil) is an aggregation of ten or twenty follicular glands, like those over the root of the tongue, and it occupies the interval between the arches of the palate. Its size varies much. Its situation is marked by the presence of small holes in the mucous membrane, without any surface prominence; but when enlarged from disease it projects, diminishing thus the size of the isthmus of the fauces." Ranney says: "The tonsils are small bodies situated between the anterior and posterior pillars of the fauces upon either side." Delavan in Satterthwaite says: "The tonsil consists essentially of a reduplication, more or less extensive, of the oral mucous membrane, containing in its folds an abundance of the so-called adenoid tissue." Mackenzie says that the tonsils are generally about as large as a hazel nut, and "can be just seen when the mouth is wide open, projecting into the isthmus faucium." Sajous says: "Each tonsil is about 9 lines long and 6 lines wide, and its thickness is usually so limited in the normal condition as to render its examination very difficult." Rumboldt says: "If they are in a healthy condition they do not project within sight; if they are in sight, then they are in a more or less diseased condition."

Drs. Bosworth, Woolen and others claim that normally there are no tonsils—that the enlargements we call tonsils are in reality abnormal conditions.

Dr. Roe says this in the main is true. Normally the collection of glands at these points are not noticeable on inspection of the throat, and therefore no tonsil appears to exist.

Every rhino-laryngologist knows that less than 50 per cent. of all the throats that he looks into have no tonsils, as we understand the word tonsil, referring to a protruding gland occupying the space between the anterior and posterior pillars. If we were to look into the throats of a large number of people, men, women and children, we would be surprised at the small number of tonsils that we can see, and when we do find them we find them associated with chronic naso-pharyngeal troubles, and not with a healthy naso-pharynx.

Now let us inquire and examine into what we do find between the anterior and posterior pillars of the soft palate. Gray, without saying anything about their size or thickness, says: "Its inner surface presents from twelve to fifteen orifices, leading into small recesses, from which numerous follicles branch out into the substance of the gland. These follicles are lined by a continuation of the mucous membrane of the pharynx, covered with epithelium, their walls being formed by a layer of closed capsules imbedded in the submucous tissue. These capsules are analogous to those of Peyer's glands; they contain a thick grayish secretion." In another place Gray says: "Peyer's glands may be regarded as aggregations of solitary glands." He also describes solitary glands as "small round, whitish bodies, from half a line to a line in diameter, consisting of a closed saccular cavity, having no excretory duct, and contains an opaque white secretion. Their free surface is covered with villi, and each gland is surrounded by openings like those of the follicles of Lieberkühn. Their use is not known." Again: "The simple follicles or crypts of Lieberkühn consist of minute tubular depressions of the mucous membranes, arranged perpendicularly to the surface, upon which they open by small circular apertures." If the capsules of the tonsils are analogous to those of Peyer's glands we would expect to find them of the same size in all cases in health, as we find no variations in size in Peyer's glands, except in disease.

Ellis and Ford say: "In its structure it resembles the follicular glands. In the bottom of the holes or depressions on the surface of the mucous membrane, are small apertures leading into recesses or follicles; these recesses are lined by mucous membrane, and are set around with closed capsules filled with a grayish fluid and contain cells, and bodies like free nuclei. The capsules do not appear to have any apertures." Delavan in Satterthwaite's Histology says: "The minute structure of the adenoid tissue of the tonsil does not differ from that of other follicular glands (those of the intestines, etc.)."

In the healthy condition the space between the anterior and posterior pillars is an inverted trouth; if we place our fingers in it without applying pressure we feel a smooth surface, but if we apply a little pressure we find a thickened condition of the mucous membrane. If we produce a contraction of the superior constrictor muscle as in gagging, we find the muscle pressing out this thickened membrane, and we feel and see a projection filling up the space between the pillars. Now the question arises, what does this thickened condition of the mucous membrane consist of? I will not take up your time with the anatomy and histology of mucous membrane, as you are all familiar with it. Mucous membrane is described as composed of three layers:

First. A superficial layer, composed of epithelial cells.

Second. The mucus proper, a layer composed of white fibrous and yellow connective elastic tissue, embracing within their meshes blood-vessels, smooth muscular fibers, different varieties of small glands, and presenting minute processes or villi.

Third. An external layer of loose connective tissue, the submucous cellular tissue.

The chart will show these three layers. You will also notice the presence of simple and compound follicular glands. As to the function of the epithelial cells, I can do no better than to quote Bosworth: "We find the mucous membrane covered with epithelial cells of various character and arranged in various ways, according to the locality and special function which it subserves: the object of the epithelial cells being merely the secretion of mucus. In these tissues, we may regard each individual cell as a typical gland, displayed over the surface of the mucous membrane, whose object is to keep the membrane softened and moistened. In fact, nature endows the membrane in this manner with its own lubricating apparatus. It is found, however, that epithelial cells simply displayed in layers on an unbroken surface are unequal to the demand. In other words, distributed in this manner, they are not equal to supplying a sufficient quantity of mucus for lubricating the passages. To remedy this deficiency, nature resorts to a very simple device for extending the secreting surface. This consists in folding the membrane upon itself, as it were, or in other words, bending it down into the tissues and back again, to form a small flask-like cavity which is called a follicular gland. In other cases, instead of forming a straight fold, the pouch-like cavity of the simple follicle is folded on itself a number of times, forming a group of small flask-like pouches, as it were, which uniting, open upon the surface by a single orifice, thus constituting what is known as a racemose gland. The arrangement of glands and follicles in the mucous membrane, therefore, I take it are for the purpose of enlarging the surface over which the epithelial cells may be distributed, and therefore increasing the secreting power of the membrane, in order that its surface shall be constantly supplied with an abundant quantity of mucus, the normal lubricant of the membrane."

In what is known as the faucial tonsil we have reduplications of the mucous membrane making from twelve to sixteen or even twenty of these follicles, the orifices giving us the crypts of the tonsil. This aggregation of twelve to sixteen follicles is what we call the tonsil. Is it a gland or a collection of glands?

The principal function of this aggregation of follicles in this inverted pouch between the anterior and posterior pillars of the soft palate is to lubricate the bolus of food in its passage to the stomach. In the act of deglutition the contraction of the superior constrictor and palato-glossus muscles presses upon the tonsil, and forces out the accumulated mucus from its numerous follicles.

Other functions are attributed to the tonsil in addition to that as a lubricator of food. Almost every one has a favorite theory in regard to the function of the tonsils. Some of them are hardly entitled to the dignity of a theory, but are merely hypotheses. Some of the theories should receive some attention. One strongly advocated by Dr. Rice is that the tonsil was a blood elaborating organ. This can hardly be borne out by the facts when we more thoroughly examine the case.

In order to determine the relations of enlarged tonsils in children to their general physical development, Dr. Upsenski examined a number of children between the ages of 10 and 14. He found fifty-two cases in which enlargement had taken place. Of these twenty were deficient as to height, weight and circumference of the chest for their respective ages. A few were myopic; thirty-seven lacked acuteness of hearing; most of them were anæmic, with weak and hoarse voice. Breathing through the nose was difficult, and in most of the cases obstructed. With the tonsillar enlargement there was also granular or atrophic pharyngitis in almost every case, and in many there was swelling of the glands of the cervical and submaxillary region. I have never met with a case of enlarged tonsils in which the patient was not better physically after their removal. In cases where the tonsil is normal in size; that is, does not fill up the space between the pillars, and in cases where they have been removed, we do not find deficient elaboration of blood, but the reverse is usually the case.

Others claim that the tonsil is a "leucocyte manufactory," and that on this account the tonsils act as sentinels, or as it has been expressed, act as guard-houses and send out squads of sanitary police, in the form of phagocytes, that stand guard at the entrance of the follicles to catch and destroy any germ that might attempt to enter the tonsil, or even pass through the isthmus of the fauces. It may be true that the germs of disease may be destroyed when they lodge upon the surface of the normal tonsils, but when we have any enlargement of them, we find the orifice of the follicles wide open, and the germs enter and find an excellent media for development. It is a very nice theory, and one that seems to please the public. They have vivid pictures drawn in their minds of the phagocytes setting upon tonsils, ready to destroy any and all the germs that attempt to enter the system through the mouth. The public are not alone in this, but even some physicians share the same opinion, and think that the tonsils are placed in the fauces for some use, and the larger they are the more capable they are of performing their functions, and that they should never be disturbed until they reach such size as to interfere with respiration, and then recommend that a little of the surface be clipped, but that care be taken not to remove too much, as it would interfere with their proper function—which is true in enlarged tonsils, to a certain extent, for they would lose their function as germ and poison absorbers, which seems to be about the only function that enlarged tonsils possess.

In prehistoric times, and in some of the savage tribes at present, that depend upon dry nuts and roots for food, something was required to lubricate the bolus of food. But with our modern cooks and method of preparing food, a lubricant is not necessary.

Time will not permit me to take up and consider all the theories that have been advanced in regard to the physiological functions of the tonsils. Most of them are only theories and a theory at best is only scientific guessing.

When we come to consider the pathology of the tonsils we find that we are about as ignorant of its pathology as we are of its physiology. Of its pathological anatomy we know considerable, but of its true pathology, that is, the physiology of its diseased condition, we know but little. We can never know the pathology of any organ till we first know its physiology. The surgeon might just as well attempt to understand surgery without a knowledge of anatomy.

Physiology is the language of histology, while pathology is the language of pathological anatomy, or diseased histology. Pathology and pathological anatomy are incorrectly used as synonymous terms by a great many medical writers.

It is very questionable whether the tonsils ever become diseased unless there is an underlying dyscrasia or constitutional taint of system, or by the lodgment of some microörganism in the follicles of the membrane.

The contents of the crypts or follicles of the tonsils when in a healthy condition consists of mucus with exfoliated epithelial cells. It is a question whether anything else is found. Cultures made from their contents do not show the presence of any microörganism. When there is enlargement of the tonsils the follicles become larger, and are filled with a yellowish substance composed of fat-molecules, detached pavement-epithelium, lymph-corpuscles, small molecular granules, and cholesterin-crystals, which probably proceed from retained and decomposed epithelial matter, and perhaps from the bursting of the capsules, which have undergone retrograde metamorphosis and fatty degeneration.

Dr. Wright has made a number of cultures from the contents of the crypts, and where they were at all enlarged he found there constantly the staphylococcus aureus or albus.

I have no doubt that this, or other organisms found in the follicles of enlarged tonsils is the cause of follicular tonsillitis. They generate ptomaines or extractive matter that acts as toxic-material. In a large proportion of cases these organisms do not appear to generate much toxic matter, but when the system is subjected to impure air, such as sewer gas, etc., the germ finds an atmosphere that is favorable to its development. They increase very rapidly under these conditions and in their increase, cause a destruction of the tissues, and a retrograde metamorphosis, with generation of toxic matter. The presence of impure air alone, without microörganisms will not, in my opinion, give rise to follicular tonsillitis, or any other form of tonsillar inflammation. It is very propable that suppurative tonsillitis is only produced by a microörganism, not necessarily a single germ, or one variety of germs in every case. Persons with healthy tonsils of normal size very seldom, if ever, have any form of tonsillitis.

If the diphtheritic bacillus come in contact with healthy normal mucous membrane, without diseased follicles, it cannot find lodgment, and does not develop. But if the follicles are diseased and full of degenerated matter, with their orifice wide open, it generally finds lodgment, and finds a good media for development. It is not necessary that it be in the follicles of the faucial tonsils, but in the follicles of any of the so-called tonsillar structure or lymphoid tissue. Under certain conditions the diphtheritic germ may find lodgment in these diseased follicles, and generate sufficient poison to give rise to constitutional symptoms without the appearance of the membrane for some length of time. Or the germ may find lodgment in the follicles outside of the faucial tonsils and the membrane not be observed till it has spread into the field of vision.

When the diphtheritic germ finds lodgment and develops in the follicles of the tonsil, we simply call it diphtheria, if in the pharyngeal tonsil, nasal diphtheria. If in the adenoid tissue at the upper portion of the trachea it is called membranous croup.

There is a dyscrasia or constitutional taint or condition of the system in some patients, which in some cases appears to be hereditary, in which we have an enlarged and diseased condition of all the circle of lymphoid tissue found in the upper respiratory tract. The term "lymphoidism" has been applied to this condition. In this condition we have enlargement of the tonsils and instead of finding the tonsil a blood elaborating organ, we find that it prevents or retards the elaboration of blood; these patients become anæmic. If the enlarged tonsils and other portions of the enlarged lymphoid tissue are removed, the patient improves at once. In some of these cases the tonsil will diminish under the administration of iron, or the iodides; still better when the combinations of iodine and iron are administered.

The constitutional effect of enlarged tonsils are always relieved by the use of iodine or some of the iodides.

Iodine and the soluble iodides are the best germ destroyers and the best destroyer, of the products of germs.

What is the so-called rheumatism of the tonsils? Is it not simply the action of some microbe and its products? Every symptom of it can be explained by germ action. We find that it is only such anti-rheumatic agents are also anti-germ agents that give us our relief in so-called tonsillar rheumatism. I do not believe that the chemical and microscopic examination of the blood, urine and other liquids and solids of the body will justify us in claiming that tonsillitis and rheumatism are one and the same disease. We may have a rheumatism of the tonsils, but not every case of tonsillitis is rheumatic in its origin.

Sokolowski of Poland, in an article on the "Pathological Inflammatory Affections of the Tonsils," speaks of diseased crypts of the tonsils with increased secretion. We mostly meet in the crypts with plugs composed of compact horny epithelial cells, with a small addition of lymphoid cells. It is known that, for the most part, they are situated in the crypts of enlarged tonsils. The author on examining tonsils hardened in alcohol, convinced himself that the walls of the crypts are strewed with small grains sometimes as if with small papillæ, which under the microscope presented themselves as greatly hypertrophied folliculi, growing into the lumen of the crypts, thence the stenosis of the orifice of the crypts and accumulation of the secretion, which remaining a longer time decomposes and iritates the neighboring tissue resulting in catarrh, mostly characterized by proliferation and great disquamation of the epithelium.

We have all met with cases of recurrent inflammation and suppuration of tonsils, where they have been cauterized or shrunken by electricity or the application of caustics, also in cases in which enlarged tonsils have been clipped or partially removed by the knife.

In this class of cases the remaining portion of the tonsil, even if it has contracted so that it cannot be seen by ordinary inspection, gives the patient and physician more trouble than before the removal. If the crypts or follicles are not entirely destroyed or removed, the remaining portion acts as a source of irritation. The secretions are retained and upon the least exposure or irritation the trouble is set up. I find that the only satisfactory method of treatment in these cases is to destroy or remove all the stump and cicitricial tissue. If any is allowed to remain we are apt to have trouble in the future.

In this paper I have avoided the use of the term hypertrophy of the tonsil, but have confined myself to enlargement of the tonsil. I do not believe that we have a true hypertrophy of these organs, as I understand hypertrophy to be a physiological process due to hypernutrition. There is no increase in the relative number of tissue elements. There is simply over-nutrition and consequent overgrowth of existing elements, dependent upon increased supply of nutrient pabulum, but there is no new tissue not normally found in the part that takes on this excessive growth. The tissue is not diseased.

In another form of enlargement called hyperplasia there is no growth of the normal tissue elements. The increase in size depends upon the organization of the products of inflammation thrown out from the vessels in the stage of congestion and exudation.

In still another form of enlargement of an organ we have a combination of both hypertrophy and hyperplasia. In this form we have not only an increase in the normal tissue elements of the part but we also have an increase of the connective tissue elements within the organ, from the deposit of inflammatory products.

In the condition spoken of as hypertrophied tonsils we find not only an increase of the normal elements, but we have an abundance of new tissue formed, as the result of a pathological process. So that we conclude that hypertrophied tonsil, so-called, is not a simple hypertrophy but is both hypertrophy and hyperplasia combined.

In most of our text books when we find a description of the historological structure, a moderately enlarged tonsil is described. When a tonsil becomes enlarged or thickened, so that it can be observed, or feels thicker to the touch than would be produced by the reduplication or aggregation of a number of simple and compound mucous follicles, we have an abnormal product, it becomes a tumor and is a source of irritation.

The following summary of the physiology and pathology of the tonsils is derived from this paper:

That the faucial tonsil is a collection of from twelve to sixteen separate and distinct simple and compound follicles and capsules, found between the anterior and posterior pillars of the fauces.

That simple and compound follicles with their capsules are found in all mucous membrane.

That the mucous follicles are not distinct glands, but are simply a folding or depression in the mucous membrane, for the purpose of increasing the surface of the membrane.

That the epithelial cells of these follicles, are the glands proper that secrete the mucus.

That the epithelial cells lining the follicles do not differ from the epithelial cells upon the smooth surface of the mucous membrane in the same locality.

That the crypts of the tonsils are simply the opening into the follicles, where the mucous membrane reduplicates itself.

That in the healthy condition the space between the anterior and posterior pillars is an inverted trouth.

That the tonsil in health does not protrude but slightly beyond the surface of the membrane.

That where the tonsil protrudes beyond the pillars of the fauces that it is an abnormal condition.

That the principal function of the epithelial cell is to secrete mucus to moisten and lubricate mucous membrane.

That mucous accummulates in the follicles of the membrane, to be used when occasion demands.

That there is no proof that the tonsil is a blood elaborating organ.

That children with enlarged and diseased tonsils are not as well nourished, nor as well developed and healthy, as children with sound tonsils.

That there is not sufficient evidence that the tonsils are "leucocyte manufactories."

That the leucocytes do not reside on the tonsil any more abundantly than upon mucous membrane in other parts of the body.

That enlarged tonsils have the power of absorbing septic poisons and furnish a good media for their development.

That the tonsil is not a gland, but is an aggregation of mucous follicles, with as many openings as there are follicles.

That with our modern methods of cooking and preparing food, there is no well recognized use for the tonsil.

That diseases of the tonsils are generally the result of microörganisms or an underlying dyscrasia or constitutional taint of system.

That in health the follicles contain mucus and exfoliated epithelial cells, and that cultures of the contents are negative.

That in enlarged and diseased tonsils the contents of the follicles are filled with pathological products, the result of retrograde metamorphosis and fatty degeneration. Cultures made from their contents show the presence of microörganisms.

That impure air will not cause tonsillitis if the follicles are in a healthy condition, and there is absence of germs.

That pathogenic germs are not so apt to develop if the follicles are in a healthy condition.

That the condition of general enlargement of lyphoid tissue called "lymphoidism" depends upon a constitutional condition in the majority of cases, and requires constitutional as well as local treatment.

That tonsillitis and other inflammatory diseases of the tonsils are not always of rheumatic origin.

That the anti-rheumatic remedies that relieve this class of troubles, do so on account of their anti-germ properties.

That inflammation of the tonsils may take place in the follicle or in the adenoid tissue.

That in the partial destruction of the tonsils and follicles, we very often have inflammation taking place on account of the closing of the orifices of the remaining portion of the follicles.

That true hypertrophy of the tonsil seldom if ever takes place.

That we often have hyperplasia of the tonsils.

That enlarged tonsils are usually a combination of hypertrophy and hyperplasia.

That every enlarged tonsil is a pathological product, and that it is a tumor.

SOME OF THE ADVANTAGES OF SECTION WORK IN THE AMERICAN MEDICAL ASSOCIATION—ADDRESS OF THE CHAIRMAN.

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY CHARLES H. BURNETT, A.M., M.D.,
OF PHILADELPHIA, PA.

Permit me to thank you for the honor you have conferred upon me in making me your chairman for this year. I welcome you to this meeting and ask your indulgence in reading you a few thoughts on the advantages of Section work in the American Medical Association.

The importance of the creation of Sections for the consideration and discussion of various branches of medical and surgical science, in the American Medical Association, has not yet been fully appreciated and can never be over estimated. It may be said boldly that the scientific value of the meetings of this Association can be maintained only by the Section-plan as now fully organized. I would even go as far as to say that the continuance of the scientific life of the American Medical Association can be maintained *only* in this way.

Such being the case, more time should be allowed for Section work, and less time taken up by the general meetings of the Association. Let the latter be purely of an executive nature and much shorter than they have been in the past. The various addresses, on medicine, surgery, hygiene, etc., heretofore read at the general meetings of the Association should be read before the correlated Sections. These addresses heretofore read before the Association in full assembly could be converted into Section transactions; let those hear who are specially interested in the subject, but let the other Sections go on with their special work at the same time. This method would save the time of hundreds of busy men, who would come more willingly a long way to attend these meetings, if they knew such a plan, as suggested, would enable them to devote more time and attention to the Section or Sections of their special choice. But men who desire to read and to hear papers on special subjects, will not take the time to write a paper or attend the meetings of the Association, if they fear that the meetings of the Sections will be too hurried to listen to papers, or what is still more important, to discuss them. This plan would divorce all scientific work from the executive sessions of the Association, a disunion in every way desirable.

The members most interested in scientific investigation and its fraternal discussion in the various Sections would find all they desire. While those more interested, perhaps, in the executive and legislative affairs of the Association, would find ample time for their very important labors, untrammeled by any scientific address, or its discussion. Some such plan as this would please all tastes and bring a larger number of physicians to the meetings of the Association, because each member, no matter what his special bent be, would know before he leaves home that he will be able to hear only what he most desires to hear, and what is still more inviting to the average man, that he will obtain a hearing, in his chosen Section.

A simultaneous meeting of Sections and of the Association for general business is greatly to be deprecated, as such a plan would lead to impairment of attendance and activity in the meetings of the general Association and of the Sections. All delegates should attend the general sessions of the Association. Therefore there should be no hindrance to such an attendance by meetings of Sections at the same time. The opportunity offered some years ago by this Association for several thousand American physicians from Maine to Texas and ocean to ocean, to meet annually in Sections, has been embraced in such a way and to such an extent as to justify the request to shorten the general sessions and lengthen the time allotted for the meetings of the Sections.

So far as pertains to the scientific work of this entire Association it matters little who are its president and subordinate officers; it is impossible for them to be bad as long as the membership is good. But it is very important that the Association shall be able to induce the profoundest students of scientific subjects, of value to the medical profession and the community at large, to come to its meetings and lay before it the results of their labors. Such men will come to the meetings if conducted on the Section plan, and they will stay away if they are not so conducted.

The establishment of the Sections as we now have them has prevented the Association from rapid degeneration into a purely social excursion. A further development of the plan, enabling the Sections to have more time and the general meetings of the Association, less time, will make it a scientific medical power in the country and in the world, and draw into its embrace the best workers in our profession throughout the United States. This will enable the Association to keep pace with other organizations which have already made use of the Section-plan of work, with results in the character of their membership and quality of their published transactions, of which we as Americans should be proud, and which we as members of the American Medical Association should endeavor to obtain in our meetings. The American Medical Association will always possess the great advantage in meeting *anually*, thus enabling investigators to lay their results before a scientific body once a year.

So much for the application of the principle of Section work to the Association at large. What shall we say of, and for ourselves? This Section is four years old, having been created in 1888. At the first meeting in Newport thirty-three papers were read, at its second meeting in Nashville, fourteen were read, at its third meeting, a year ago, in Washington only ten papers were read, though more were promised. This falling off was probably due to the illness of the chairman for that year. This year, as we are pleased to see, there are forty-four papers announced on the programme. The American Medical Association is the Charlemagne of the profession of medicine in this country; let this Section cherish the ambition of being its valiant and faithful Orlando.

Having been fortunate enough to succeed in obtaining the creation of Sections, and now having expressed the hope of gaining more time for Section work, by shortening the hours of the general sessions of the Association, it behooves us to go to work in earnest and make the existence of this Section of value to ourselves, and the profession. A direct and quick way of doing this is to prepare a paper, and attend the meeting and read it. The selection of papers deserving publication, their edition, and all matter pertaining to their publication should they increase greatly in number, might be left to a carefully chosen publication-committee. The discussions provoked by the papers read should be carefully reported by a stenographer, as they are generally as valuable as the essays.

Surely there is no channel in this country through which so large a number of physicians interested in Otology, Rhinology and Laryngology, can convey their views and the results of their labors to so large a number of intelligent hearers and readers as through this Section of the American Medical Association. Therefore, whoever is in earnest in his special work and in the desire and intention to communicate the results of his labors and have them discussed, and to learn from the writings and observations of others, should not fail to embrace the chance of doing these offered in this Section. Having obtained such an arena, from the parent Association, pride should prompt us to fill it with able contestants for the prizes sure to be gained by good scientific work. The presentation of good papers before any Section will tend to keep away bad ones. I know of an instance in which a member, not of this Section, once put himself on the programme as prepared to present a paper. When his turn came to read his essay and his name was called, he was absent. In explanation of his failure to appear he said he had heard so many good papers read, superior to his own, that when his turn came he was ashamed to read his essay. Hence one good result of presenting worthy papers is to keep out valueless articles. Men who might have come to palm off poor stuff upon an unorganized assemblage, may remain to learn when they attend a session of a well-organized Section. Thus not only the general average of excellence in the papers emanating from the American Medical Association is elevated, but its function as a teacher of the profession is amplified. Here the rhinologist and laryngologist may become better aurists while the aurist becomes a better rhinologist. Thus our usefulness as practitioners is increased and our patients benefited by our increased knowledge. For in this Section, as in any other, those interested in the same subjects can meet, discuss and learn to know not only one another but one another's ideas. Thus, we can realize the truth of the Chinese saying that "one can learn more of a man's views by half an hour's conversation with him, than by reading *all* his written works."

"Not by the possession of truth, but by the search after it, are the faculties of man enlarged, and in this alone consists his ever growing perfection." Such are the words of Lessing. May we not ponder these words with advantage and apply them to ourselves in this Section? We possess the facts relating to our specialty, of value to ourselves and others, and we are also seeking for more. Let us assemble here, impart to one another what we know and thus aid one another in the search for more truth. This will enlarge our faculties and lead to the general perfection of the Section, so that our individual imperfections shall be cleared away in its ever-growing perfection.

PAPILLOMA OF THE LARYNX.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY ROBERT D. GIBSON, M.D.,

OF YOUNGSTOWN, OHIO.

The frequency with which papilloma of the larynx are met, and the difficulty often experienced in their removal prompts me to bring the subject before this body for consideration.

About 70 per cent. of laryngeal growths are of a papillomatous nature, and experience has shown that they rarely return if thoroughly removed and the stump carefully cauterized.

As to the methods of removal and means of cauterizing the stump, I would ask your attention for a few moments.

Small growths in accessible positions may be grasped with the forceps and removed without difficulty, and the stump may be cauterized with any of the usual chemical caustics; but those partly concealed and the larger growths with broad attachments (sessile) are not readily grasped with the forceps. These are torn off by pieces, and the operation is more or less incomplete, leaving much to be done by subsequent cauterization. For this purpose the chemical caustics are not suitable, for they either do not *penetrate* deep enough, or they must be used to such an extent that they spread beyond the area desired to be cauterized and do damage to the healthy parts.

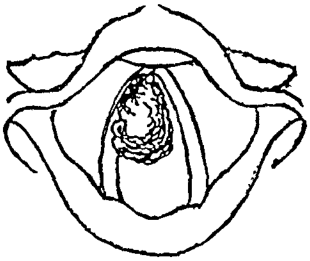
By means of the galvano-cautery these growths may be reached at any point by bending the electrode to the desired shape. Small growths may be destroyed by a single puncture, and large ones by repeating the cauterization from time to time till they are entirely destroyed.

Large growths may be removed *en masse* by means of the galvano-cautery snare; small growths are not easily caught in the loop and are best destroyed by simply puncturing them with the galvano-cautery needle.

The galvano-cautery snare possesses several advantages over the forceps for the removal of large laryngeal growths. Its action is sure, quick, painless and bloodless. The stump is cauterized at the same time the growth is removed. The galvano-cautery outfit for laryngeal work should consist of a one cell storage battery (or a suitable current controller if the street current is employed). Shech's handle, one half doz. electrodes (assorted), canula, fine wire, and connecting cables.

Everything should be in perfect working order before the throat is cocainized, as the effect of the cocaine soon passes off. With a well trained throat to operate on and everything in perfect working order, it is often impossible to reach the exact point desired, or to pass a loop over a tumor and get it properly adjusted, without a considerable loss of time. And my experience has been that when a throat is once irritated by the presence of an instrument it is not so readily controlled again that day.

The following case, of which the accompanying illustration is a faithful drawing, will illustrate the advantage of the cautery snare over the laryngeal forceps.



Laryngoscopic Image.—Papilloma, springing from the anterior two-thirds of the right vocal cord.

Mrs. ——, æt. 27 years, U. S. parentage, otherwise healthy, possessing a full contralto voice, and very fond of music, suddenly lost her voice for singing; she could not sing anything. She thought she had "strained her voice." Months passed along and the voice grew more husky, and finally the trouble began to interfere materially with breathing and conversation. Upon examination a large papilloma was found springing from the anterior two-thirds of the right vocal cord, falling down between the cords. The throat was trained for some months, by passing the forceps down into the larynx and touching the growth, without cocaine. As soon as this could be done successfully, the next step was the selection of a suitable pair of forceps with which to remove the growth. Mackenzie's long forceps were half an inch too short, Mathieu's forceps were the right length, but were not large enough in the jaws to grasp the entire growth. (Specimen exhibited, preserved in alcohol.)

Next the galvano-cautery snare was tried and selected as the only means by which the growth could be removed *en masse*. The throat was thoroughly cocainized, a four per cent. spray was used for the pharynx, and a twenty per cent. solution applied to the larynx by means of an applicator. This was repeated three times at intervals of five minutes. After three or four trials the loop was properly adjusted so that the entire mass was engaged in the loop and quickly cut off. The throat was under perfect control, there was not the least pain experienced, and not a drop of blood lost. Patient was instructed not to speak at all for four days, and not above a whisper for one week. Voice fully restored and no trace of any abnormality at the end of one year from date of operation.

In closing the discussion which followed the reading of the paper, the author explained the means employed to prevent the growths from falling into the trachea in case they should not adhere to the instrument. During the period of training the patients are instructed to take a full inspiration after the instrument is in position. The patients are not informed that the growth is to be removed at this sitting and the inspiration is taken as usual at the time the word is given. In case the growth should fall from the instrument when severed, it is at once expelled by the force of the cough which follows.

A CASE OF TUBERCULOSIS OF THE PHARYNX.

Read in the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY J. E. BOYLAN, M.D.,
OF CINCINNATI, OHIO.
PROFESSOR OF LARYNGOLOGY AND OTOLOGY, WOMEN'S MEDICAL COLLEGE, MEMBER OF THE STAFF OF THE PRESBYTERIAN HOSPITAL, ETC.

Tuberculosis of the pharynx as a primary or local affection is of such exceptional occurrence and the nature of the affection so interesting, that I need hardly apologize for reporting a single case; my only regret in doing so, is that I have not been able, since committing myself for this occasion, to review the literature so thoroughly as to be in a position to state exactly, the very short time within which each of the comparatively few cases recorded proved fatal or to enumerate the isolated ones reported to have recovered.

Mrs. B., of Carlisle, Ky., 25 years of age, six months pregnant, was brought by Dr. Ricketts, accompanied by her husband and brother, to consult with me concerning a very painful throat affection which had recently developed, and to establish, if possible, its exact nature.

The patient gave the following history: She had had a catarrhal condition of the throat for two years past which had been treated by her doctor at home with applications of nitrate of silver, but which made no progress towards recovery. About a year ago finding that she had an irritating cough, she consulted Dr. McKenzie, of Cincinnati, who informed her that she was threatened with consumption and recommended an immediate change of climate. During a six months' sojourn in the south, she had more than regained her former weight, the cough had left her and she returned some months ago believing her health entirely restored. Within the last six weeks, however, there had developed a painful condition of the throat, quite different from her former affection, which was rapidly growing worse. Although her appetite was good and she had no cough, she suffered so intensely at every attempt to swallow that she postponed taking food as long as possible, and begged for some speedy relief, so that she might again eat with comfort. Patient was fairly nourished, somewhat pale, there was noticeable enlargement of the cervical glands on both sides. Upon inspecting the pharynx the following characteristic picture presented itself:

General pallor of the mucous membrane of the hard palate was noticeable at a glance, which pallor comprised on the left side, the whole roof of the mouth as far back as the anterior pillar, while on the right side, it gradually merged into an abnormal redness and then into a severe infiltration which remained sharply defined from the pale right side at the median line and which involved the uvula, the right anterior and posterior pillars, the tonsil and the right side of the posterior pharyngeal wall. Upon the right anterior pillar there was an oblong shallow ulceration with very irregular outline about as large as a silver three cent piece. In the immediate neighborhood of this ulceration as well as in other parts of the field of infiltration, a number of yellowish white and grayish white specks were to be seen, in places distinctly isolated, in others merging into indistinct whitish patches. At the base of the tongue on the right side was a similar irregular ulceration somewhat larger than the first; upon the tonsil a number of smaller irregular patches, which in places were confluent; upon the posterior pharyngeal wall also several filmy irregular whitish patches. Laryngoscopic examination showed the mucous membrane somewhat anæmic, the larynx otherwise apparently normal. In making a physical examination, a shorter and duller percussion note was noticeable over the left apex than over the right and a somewhat roughened expiration, beyond this I could detect nothing abnormal. After a repeated careful inspection, concurring with the opinion of Dr. Ricketts, I made a diagnosis of tuberculosis based upon the condition of the pharynx, and further assumed the unpleasant duty of notifying the husband and brother that, notwithstanding the present inactivity of the disease in the lungs a fatal and rapid termination was almost certain. They were greatly shocked and evidently incredulous. They expressed themselves as loath to accept this hopeless prognosis without further consultation and suggested that Dr. William Carson, in whose judgment they justly placed the greatest confidence, be called in. On the following morning Dr. Carson made a physical examination, as the result of which he upheld the diagnosis of tuberculosis, though he found the disease in the lungs at the time in an inactive condition,

The patient remained under my treatment for a week. Curetting, owing to the extent of the lesion, was not to be considered and the treatment was mainly directed towards relieving the suffering and facilitating nutrition. The application of cocaine and a 10 per cent. solution of menthol brought very transient relief; the cocaine had to be used each time before taking food and the menthol, when first applied, proved very painful; on the third day I began the insufflation of iodoform powder containing 1-16 gr. of morphine and was agreeably surprised at the amount of relief it afforded the patient. The effect lasted the greater part of the day so that she could swallow without pain till towards evening, and within the next three or four days there was a perceptible improvement in the condition of the pharynx.

September 23, she determined to return home where she would be more comfortable and she undertook to have the insufflations, upon which she became dependent, properly carried out.

On November 13, a letter from her husband informed us that the morphine and iodoform had proven most efficaceous. The family physician was using it and she had not only experienced very great relief but much of the sore place had healed and that she was in hopes of complete recovery.

A letter of a little later date brought news that the physician, then in charge of the case, ridiculed the idea of tuberculosis and had undertaken to treat her free of charge in order to demonstrate the error of the diagnosis arrived at in Cincinnati.

On January 8, less than two months later, word was received from the patient's husband that she had sunken into a condition of exhaustion and had succumbed to the disease, having given birth to her child some ten days before her death. Death occurred, therefore, within four months from the time the condition first made itself felt in the pharynx.

In the present state of our knowledge the question so frequently raised as to whether tubercular lesions in the pharynx and larynx are ever primary, can hardly lead to a satisfactory issue. While such lesions occur apparently independently, there will always be some ground for the sceptical to stand upon, as for example in the case of Schach who inclines to the view that when the affection is present in the pharynx, the disease always exists in the body in a dormant state, even though it be impossible to demonstrate it. Of far more practical importance is the question: "Can tuberculosis be recognized with certainty from the local lesion *alone*?" As a matter of fact we know that these lesions do present themselves at times when constitutional symptoms either do not suffice to establish the diagnosis, or cannot be detected at all, and we must then depend upon the local symptoms alone, for our diagnosis. Now in scanning the literature of the few cases reported, we find the lesion produced by tuberculosis in the pharynx possessed often of such distinctive features as to greatly facilitate the diagnosis; in fact in the majority of these cases tubercular nodules themselves were plainly visible in the neighborhood of the ulcerations and were verified post-mortem by the microscope in several instances, a condition which is almost never seen in the larynx. The entirely different character of the tubercular ulcer from the ulcer caused by syphilis has been nicely pointed out by Fraenkel, and both he and Tsembert have so carefully described the changes produced by the progress of the affection in this tissue, as to render its recognition far less difficult. In what proportion of cases the nature of the disease can be detected in its incipiency may not yet be established, but its exceptionally rapid course in this region, no doubt accounts for its more characteristic appearance. In the case above reported, the minute yellowish or grayish white specks scattered irregularly over the infiltration, isolated in places, in others becoming confluent and blurred; the shallow irregular ragged ulcer, the general pallor of the mucous membrane surrounding the infiltration, the excessive dysphagia, seemingly out of proportion to the severity of the lesion, presented an array of symptoms corresponding so strikingly to those described by the above mentioned observers that although I had seen a similar condition but once before, it appeared to me impossible to mistake it for any other affection.

PAPILLOMA OF EPIGLOTTIS, ETC.

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY A. B. THRASHER, M.D.,
OF CINCINNATI, OHIO.

Miss Pearl S., æt. 17, Springfield, Ohio, was referred to me by Dr. Langdon, March 3, 1892. The vault of the pharynx was covered with adenoid tissue, rough and lobular, which extended from the region of Luschka's *tonsil back and down* over the posterior pharyngeal wall to a point on a level with the upper surface of the epiglottis. This tissue was apparently about half an inch thick in the center above, and gradually grew thinner as it extended downward and toward either side.

On pressing down the tongue a reddish glandular tumor was disclosed, which, on further examination proved to be attached to the epiglottis. The tumor was about the size of a large English walnut, the surface being divided at irregular intervals by deep seams and covered by small granulations, giving it somewhat the appearance of a large lobular strawberry. It was attached to the free border of the epiglottis, rather more on the upper than the under surface. The balance of the epiglottis presented a normal appearance as to both size and color. The weight of the neoplasm was so great as to press the epiglottis downward and its size so large as to completely shut off the under parts of the larynx from the laryngeal mirror. The voice was quite husky and a nervous cough had been present for *some time*. There was increasing dyspnœa for some three months, this being really the symptom which caused the patient to seek relief.

After the epiglottic neoplasm had been removed (which was accomplished by means of a wire ecraseur) the interior of the larynx was revealed. The movement of the left vocal cord was considerably impaired by some small sessile growths in the ventricle and over the left ventricular band, macroscopically quite like the tumor on the epiglottis.

After the lapse of two months there is as yet no tendency toward a recurrence of any of this tissue (that in the naso-pharynx and larynx having been removed by curette and galvano-cautery). No microscopic examination of the tissue was made, but the clinical history points to papillomata of larynx, while the pharyngeal growth seemed to differ in no respect from that which I have in other cases classed as adenoid tissue.

Discussion.

Dr. Casselberry, Chicago:—Concerning the diagnosis of laryngeal neoplasms Felix Semon has called attention to the fact that carcinoma, tubercle, etc., may have superficial papillomatous excrescences and that in order to get a correct result by microscopic examination, its entire growth must be examined. It is because this is rarely possible during life or before radical operation that the microscopic diagnosis of laryngeal growths is so unsatisfactory concerning the removal of laryngeal papillomata; I am glad to hear the galvano-cautery advocated. At the International Congress at Washington, in 1887, I had the pleasure of opening a discussion on this subject, and my paper consisted chiefly in advocating a specially constructed electrode for destruction of small sessile papillomata located on, above, or beneath the vocal cord. The idea was then criticised, among others, by Mr. Lennox Browne, who hesitated to use this instrument below the line of the epiglottis; under cocaine, however, I failed to see sufficient reason for such restriction. The electrode then exhibited has the correct laryngeal angle and descending arm has an anterior curve, the convexity of which assists in drawing forward the epiglottis. It is armed at the end with a short platinum loop from 4 to 6 inches in length, which can be bent to either side and made to impinge beneath the vocal cord when necessary. It has no shield because such only increases its bulk and interferes with vision, and because it is unnecessary, for the careful operator having introduced the instrument cold, will press the platinum loop outward against the neoplasm and away from the opposite side before heating it.

In certain cases it is superior to forcep because it will penetrate under illumination to points, such as the anterior commissure or beneath the cords, to which forceps, by reason of their larger size cannot pass, at least without obstruction to light and interference with vision.

Large growths, when possible, would best be removed by forceps and the base subsequently cauterized. The snare would require great caution to be exercised to avoid possible dropping of the neoplasm into the trachea. Concerning cocaine, care is necessary, strong solutions—20 per cent. on cotton application, and 10 per cent. in spray, are required to anæsthetize the larynx. These are capable in susceptible individuals of producing dangerous toxic symptoms. Before operating the susceptibility of the patient to cocaine should be tested at previous sittings; and if at the same time we train the patient by passing probes, etc., as was formerly customary before the use of cocaine, success will be more readily attained and by the use of less cocaine.

Dr. Casselberry, Chicago:—I would call attention to Dr. DuBlois' method of operating, *per vias naturales* by the finger nail. I believe it to be perfectly feasible, the larynx is high in children and can be reached and the soft papillomatous growths thoroughly scraped out of the larynx by a long finger-nail. If necessary an anæsthetic could be given and the procedure facilitated by pushing the larynx upward from without by the other hand.

I am disposed to deprecate thyrotomy as dangerous and often unsatisfactory. I recall a case in which a structure subsequently formed which together with recurrence of the growth finally caused death one night when the tracheotomy tube accidentally became dislodged.

Also another case in which recurrence necessitated the wearing of an intubation tube for years. I am disposed to avoid thyrotomy as much as possible, dealing tentatively with them by tracheotomy, intubation, and intralaryngeal manipulation until the child grows older.

Dr. Gibson:—The remarks of the several gentlemen who have spoken, are evidence that we have had much the same experiences under like circumstances.

The small size of the electrode or canula as compared with the forceps renders it possible to see exactly what we are doing.

To prevent the loss of the growth, by falling into the trachea, I instruct the patient to take a full inspiration just before I sever the growth. The patient had been repeatedly instructed to do so during the period of training, and did not have any idea as to my purpose at the time of removal. The object of this precaution is quite obvious.

To prevent toxic effects of cocaine, it has been my practice to instruct every patient in which cocaine is used in the upper air passages to *refrain from swallowing*, and have never experienced any constitutional effects of the drug when this instruction was followed.

The remarks on the occasional disappearance of papilloma after the use of stimulant and astringent, brings to mind what has frequently been debated in my mind, viz.: During the years that I was engaged in general practice it was my custom, when asked the best way to remove warts from the hands, to instruct them to apply castor oil thoroughly, and invariably the warts would vanish in a very short time.

Dr. Seiss has seen laryngeal papillomata absorbed under applications of iodine, etc. In structure these growths are the same as the ordinary dermal warts, which are well known to undergo absorption under mild applications of silver nitrate, etc.

Dr. Price Brown, Toronto, referred to a case of papilloma of left vocal cord, in a gentleman age 55, who was compelled to use his voice as his daily occupation. This was relieved and contraction of the papilloma secured by applications of thuja occidentalis, followed by treating with 10 per cent. of menthol in cellulose. Also to a case of double fibroma of larynx in a gentleman aged 37, suffering at same time from aneurism of aorta, the one arising between right arytenoid and right ventricular band, and projecting inwards over the glottis, impeding respiration; the other springing from right side of larynx immediately beneath the vocal cord. Under cocaine these were removed at a number of different sittings by galvano-cautery points, with result of relieving the dyspnœa. Some time afterwards the patient died of aneurism of aorta. The larynx which I obtained at the post-mortem exhibits the cicatrix of lower growth but not of the upper.

Dr. Lowman, Cleveland, O.:—A case of papilloma that passed under my observation proves that papillomata sometimes tend spontaneously to recovery. The patient was a child who had been hoarse for some months, and had rapidly grown dyspnœic in the last few weeks immediately preceding his application for relief. When first seen the breathing was so difficult that the face was cyanotic.

Laryngoscopic examination revealed a growth almost filling the chink of the glottis. Prompt interference was necessary and was obtained by a tracheotomy. Pneumonia and a prolonged illness followed the operation. After the recovery of the patient from the acute disease, the growth was inspected and found to have diminished in size. Repeated examinations at intervals of a few weeks showed that the growth was gradually becoming smaller. In less than a year all evidence of its appearance had disappeared. There had been no treatment whatever, unless the rest the tumor gained by reason of the tracheotomy can be considered treatment. The air passes through the larynx rapidly, and especially when the glottis is partially filled, and the opening into the trachea very much contracted. For this reason it may be that the papillomata grow more rapidly or swell more rapidly as the breathing grows more difficult and the friction greater.

The case shows that a papilloma may disappear, providing the larynx has rest from the air currents.

It is likely that the papilloma that disappears under treatment with astringents would subside under volitional or partial rest of the larynx.

Dr. Wadler, Indianapolis, called attention to the need of preparatory treatment, and said it was his custom to use stypics and astringents at the time, and frequently has witnessed their disappearance under such treatment. He also wished to emphasize the suggestion of Dr. Casselberry, of great caution in the use of cocaine, as he had witnessed dangerous symptoms in his early experience prior to his learning to exercise this great care.

Dr. Boylan said:—I have been interested in this case, in that I have one at present under treatment of a similar nature, excepting that the tumefaction is considerably larger: it being attached at and just below the anterior commissure and extending back so as to leave a comparatively small space for respiration posteriorly. The case was treated for asthma for some time till the tumefaction was finally discovered and came finally under my treatment. I hesitated for some time whether to perform tracheotomy at once or to attempt the removal through the pharynx. I finally decided to prepare for rapid tracheotomy and to then adopt the latter course. I succeeded in removing over one-half of the growth with the forceps, and thus averting the immediate danger of asphyxiation. Now while I appreciate all the advantages mentioned by the previous speakers in favor of the galvanocautery, I doubt if I shall be successful in reaching the remainder of the growth with the cautery, owing both to the age of the patient, who is a boy six years of age, and to the location of its attachment, and I am inclined to believe that I will stand better chances of reaching it with Schrotter's forceps.

ORBITAL AND OCULAR GROWTHS.

REPORT OF FOUR CASES WITH TWENTY-TWO PHOTOMICROGRAPHIC ILLUSTRATIONS.

Read in the Section of Ophthalmology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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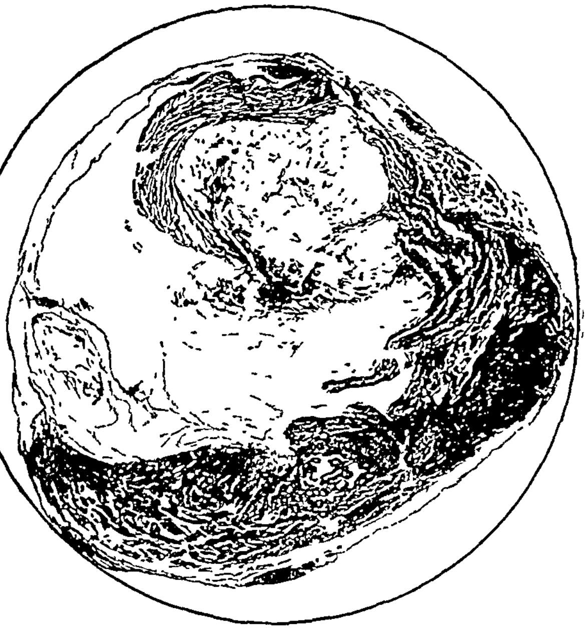
I present these cases of tumors of the eye and orbit from my clinic at the Richmond, Va., Eye, Ear & Throat Infirmary operated on during this year, 1892, because I thought they were of sufficient interest for consideration. One is a case of melanotic sarcoma of the choroid that has as yet had no recurrence, but as this character of tumor is metastatic, there may be some manifestations of the same kind of growth elsewhere. The second is a sarcoma of the orbit which recurred twice after the original growth and eye were removed. The other two were growths of the orbit intimately connected with the periosteum; one in a woman 58 years of age, the other in a girl 16; one from the inner side of the orbit, extending from the orbital edge back and behind the eye to the sphenoidal fissure, the other from the external side following the same direction, and producing an apparently similar pathological condition of the eye and its annexes. Cases one and three were operated on by myself; cases two and four by Dr. John Dunn, Chief of Clinic at the Infirmary.

Case 1. Melanotic Sarcoma of the Choroid.—Geo. W. Wingfield, aged 54 years consulted me first, May 30, 1890. The left eye was blind, slightly exophthalmic, tension increased, the cornea clouded, the anterior chamber abolished, and the whole upper and outer part of the sclerotic of a dense black color. I diagnosed melanotic growth of the eye, and advised enucleation. This he declined to have done, and went home. I heard nothing from him until February 6, 1892, when he presented himself at my office with the eye so enormously enlarged that the lids could not be closed over it, the whole of the sclerotic perfectly black; patient suffering constant and excruciating pain. I gave him the same advice as before, and he consented to the removal of the eye. As cocaine had very little effect in anæsthetizing the eye, I gave chloroform, althogh I rarely have recourse to anything but cocaine in enucleation, and removed the globe. It was so distended, I was obliged to split the outer canthus to get it out of the orbit. Fearing the growth extended backward along the optic nerve sheath I grasped the nerve with a stout pair of fixation forceps before I cut the eye loose, so as to draw it out, and remove as much of it as possible. This I did after enucleating the eye, drawing the nerve out with the forceps already in position as far as possible, then putting another pair behind them and pulling again hand over hand as it were, and in this way I cut off about three-quarters of an inch of the nerve.

The eye was placed in Muller's fluid and sent to Dr. Wm. M. Gray, pathologist of the Army Medical Museum in Washington, and I append his report of the condition of the eye. I saw this patient on May 30 when the socket was clean and no signs of recurrence. I inserted an artificial eye and he returned home.

Dr. Gray sent me the following report of his examination of the eye; with the accompanying photographic plates and microscopic slides, both prepared by him in his laboratory.



SPECIMEN A.—Fig. 1. Large round and large spindle cell melanotic sarcoma of eye; developing from choroid coat.

Fig. 1. Shows a longitudinal antero-posterior section through the entire eyeball, and its contained tumor.

The tumor is composed of two seemingly distinct masses; one an intensely pigmented growth forming the peripheral portion, and a central mass, which is very slightly pigmented. The outer pigmented portion is made up of large round, spindle and stellate pigment cells, with a few small round unpigmented cells. The slightly pigmented central portion of the growth is composed of large round cells, somewhat epitheloid in appearance, and large spindle cells arranged in circular masses around small blood vessels; the walls of these blood-vessels are quite thick, and are composed of dense fibrous connective tissue. Fig's 2 and 3 show the circular cell masses in the slightly pigmented portion.

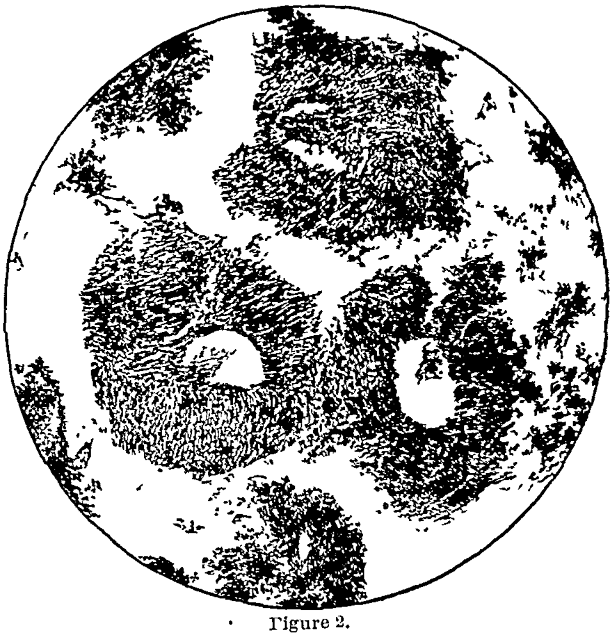


Figure 2.

Fig. 4. one of the circular cell masses on the border of the dense pigment portion. Fig. 5 shows the large round cells composing the greater portion of the entire growth; it is taken on the border of the densely pigmented portion, and contains a number of large round pigment cells. Fig. 6 from the same locality shows the same cells with an irregular shaped large spindle pigment cell, and several pigment masses. Fig. 7 shows the large spindle cells composing a portion of the central unpigmented circular cell masses. The greater portion of the sclerotic coat is obliterated by the *pigmented growth with which it is infiltrated*, and shows in several places the growth passing out into the orbit. Fig. 8. The retina has entirely disappeared.

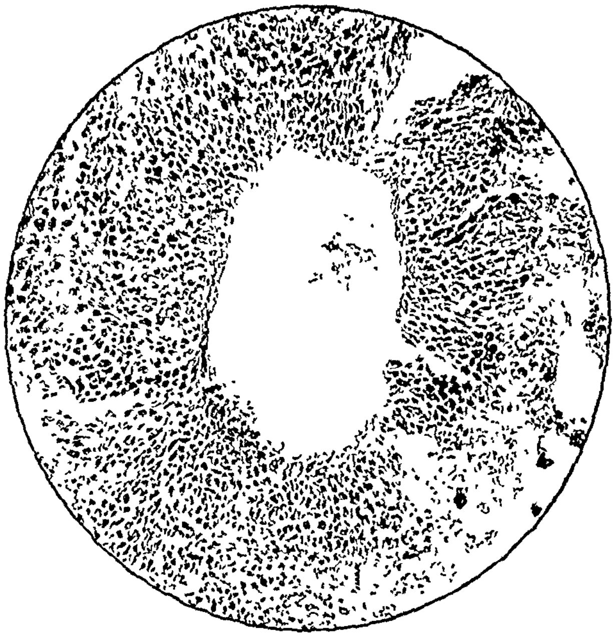


Figure 3.

Case 2.—Malignant Growth of the Orbit.—(Report given me by Dr. Dunn.) The patient, a full-blooded negro, aged 19 years, came Nov. 6, 1890, to the clinic of the Richmond Eye, Ear and Throat Infirmary. He had a growth protruding from between the lids of his left eye. This growth had made its appearance about nine months before, the patient being then 18½ years of age. The negro said that in July, 1890, the growth had been partially removed, *not entirely*, for he had been told that a small piece of it still remained. Since July the tumor had grown so rapidly that the day the negro came to the clinic it completely filled the inter-palpebral space, and the eye ball could be seen only by raising the upper lid. Examination of the tumor showed that it consisted of two parts, an encapsulated central part and its prolongations along the conjunctiva and subjunctival tissue of the lower cul-de-sac. The encapsulated portion was about the size of a hickory nut, and projected from the orbit below the eye ball, which it pressed upward and backward, and the movements of which it greatly hindered. The lower half of this central part protruded from between the lids and pressed so firmly against the inner canthus that the caruncle could not be seen. *The prolongations from the surface* of the main body of the growth had completely filled the lower cul-de-sac of the conjunctiva to within a few mm. of the outer canthus.

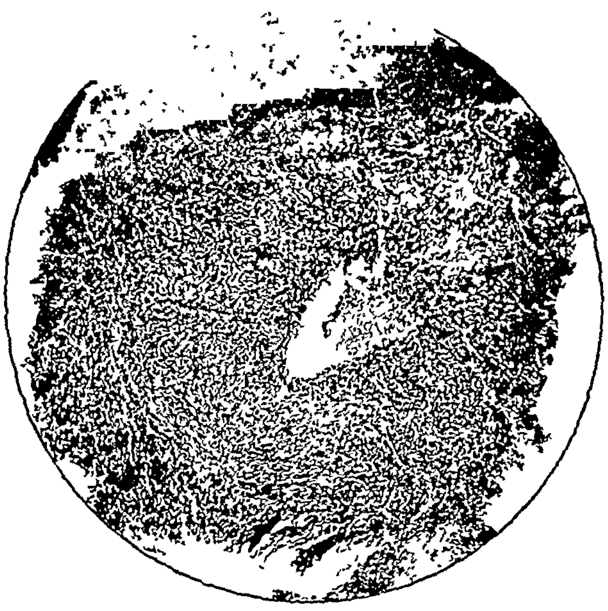


Figure 4.

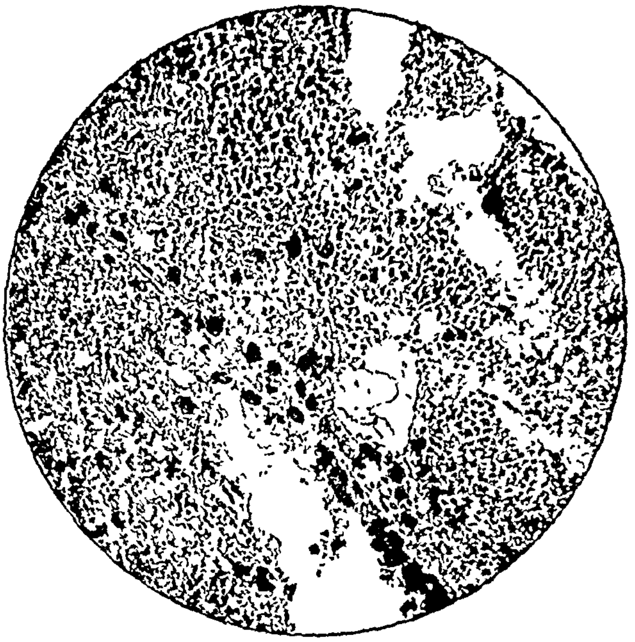


Figure 5.

The eye ball was perfectly healthy; so was the upper half of the ocular conjunctiva and the conjunctiva below immediately adjacent to the cornea. Centrally below, however, were seen running from the tumor to the edge of the cornea perhaps half a dozen small blood-vessels; these were all within a space of 6 mm. breadth. The surface of the tumor was red, rough, and, in places, warty, and was covered with a copious, dirty, purulent secretion. The tumor, though not painful in itself, was very sensitive to the least pressure, even when made through the lids.

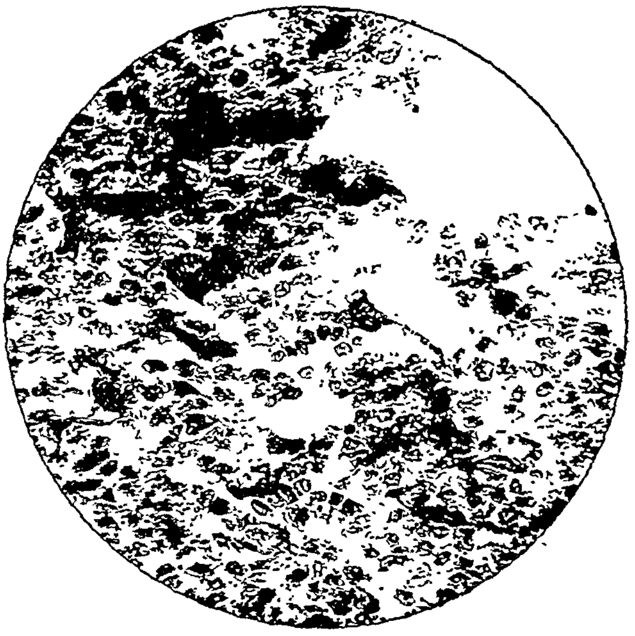


Figure 6.

Under cocaine, a small portion of the tumor was removed for microscopic examination, and patient was told to return in two days. The microscopic examination was unsatisfactory.

On Nov. 8, the patient returned. The growth was perceptibly larger than it was two days before, and I proceeded to remove it. An external canthotomy was done; then t h conjunctiva of the upper half of the ball was cut as in an enucleation, and the tendons of all the muscles, except the *inferior rectus* were cut. The nerve was next severed, and then the eye and the tumor were turned of the orbit from above, after which no trouble was had in removing the growth in what seemed its entirety. The main body of the tumor had the following measurements: From above downward, 32 mm., length 25 mm., from before backward, 15 mm.

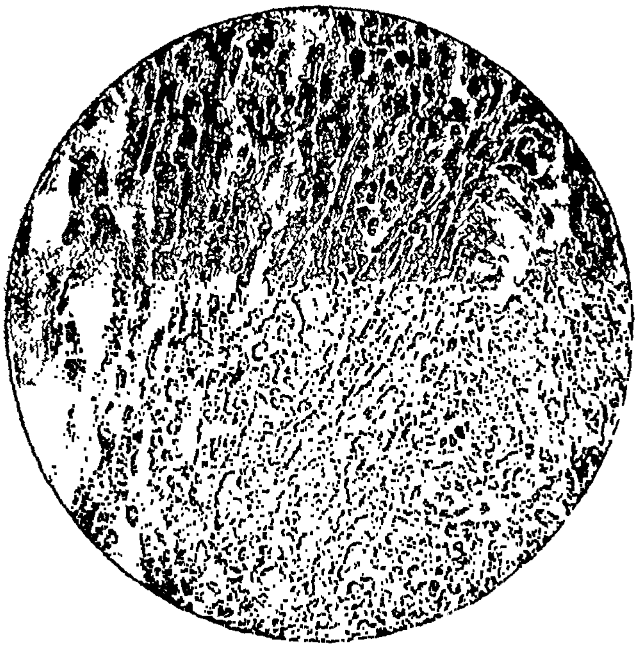


Figure 7.

The negro, who was a sailor, came to the clinic to have his eye dressed only for four days, after which time he joined his vessel.

He returned in January 1892. Up to January 1, there was no return of the tumor. It began to reappear early in this month, and by the 21st, it was two-thirds the size of a lemon, filling entirely the orbit, and protruding in a large mass from it. It was immovable in the orbit. Removed under chloroform. Found to have for the most part, a firm capsule, which was adherent to the eyelids, and everywhere to the walls of the orbit, even as far back as the entrance of the optic nerve. Large portions of the periosteum of the orbit stripped off in attempt to remove tumor. Orbit cleaned out. There were several sacs present in the tumor. Rupture of one showed it to be filled with thick cellular juice. Diagnosis, fibro-cystic sarcoma. Wound healed by remains of lid adhering to walls of orbit as far back as possible. No return up to May 30, 1892.

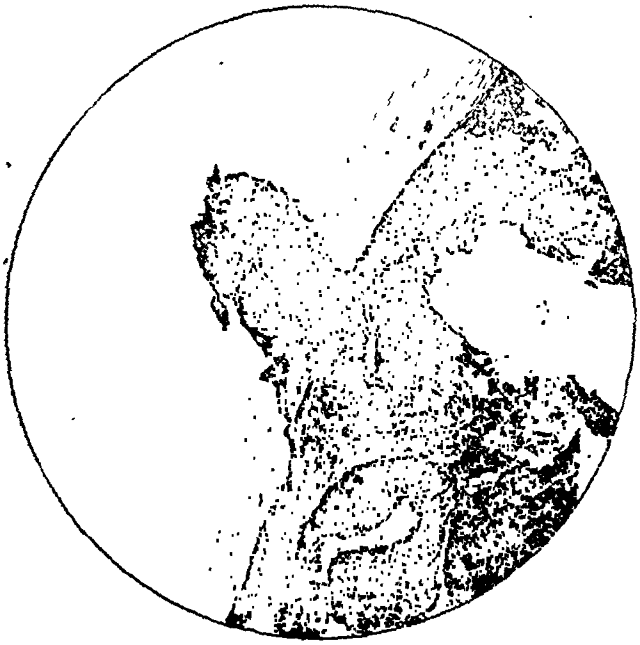
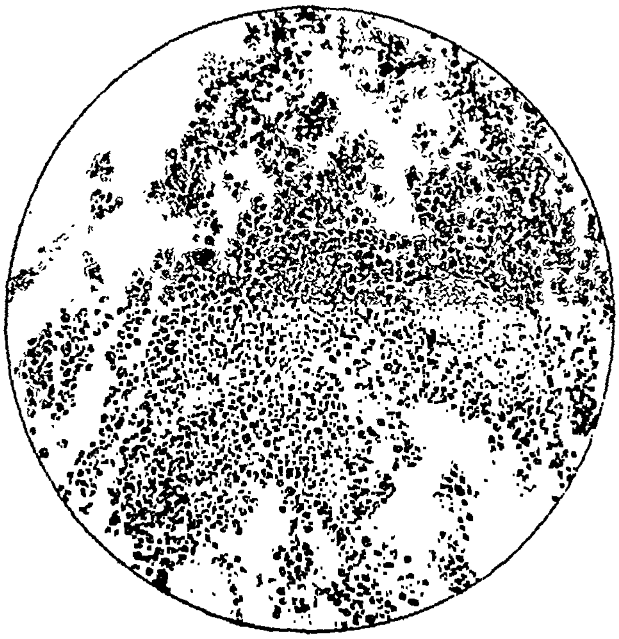


Figure 8.

The growth was also sent to Dr. Gray, who gives the following report with illustrations.



Specimen B.—Fig. 9.—Small and Large Round Cell, Giant Cell Sarcoma of Orbit.

This growth is composed of round cells of various sizes; the larger cells have a very close resemblance to epithelial cells; in number the smaller cells predominate. Scattered through the cell mass are numerous typical giant cells, also some large round or irregular shaped cells, with multiple nuclei, which have not the characteristic appearance of giant cells, being almost entirely lacking in cell protoplasm.

There is very little intercellular tissue in the growth, no distinctly formed fibrous intercellular tissue, the cells seem to be connected by a finely granular material.

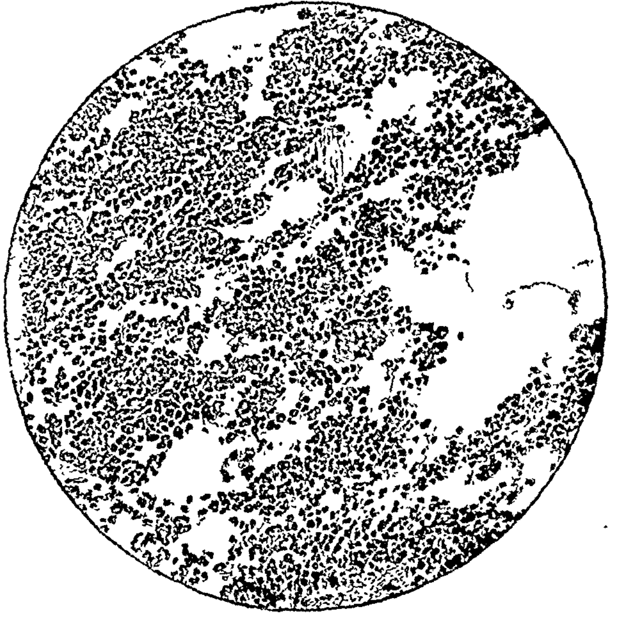


Figure 10.

The growth is quite vascular, some of the blood vessels have distinct fibrous walls, others are mere channels between the cells as shown in Fig. 9. Fig's. 10 and 11 of the same field show the round cells composing the body of the tumor, with a group of three giant cells. Fig. 12 shows several of the irregular shaped cells composed of multiple nuclei with a minimum of cell protoplasm.

Case 3.—Fibroma of the Orbit.—Mrs. S. C. Robinette, 58 years of age, of Crewe, Va., consulted me on February 15, 1892. She had been suffering great pain in the left side of her face for about three months, especially under and to the nasal side of the eye. It was thought at first that she had some trouble of the antrum. When I saw her the eye was tilted upwards, slightly exophthalmic, motion downwards was impeded, the inferior rectus being paretic, and there was pain on pressure over the inner and lower orbital edge. The vision was 20-30 with +1D. The refractive media were clear, but the optic nerve was engorged resembling "Stauung's papilla."

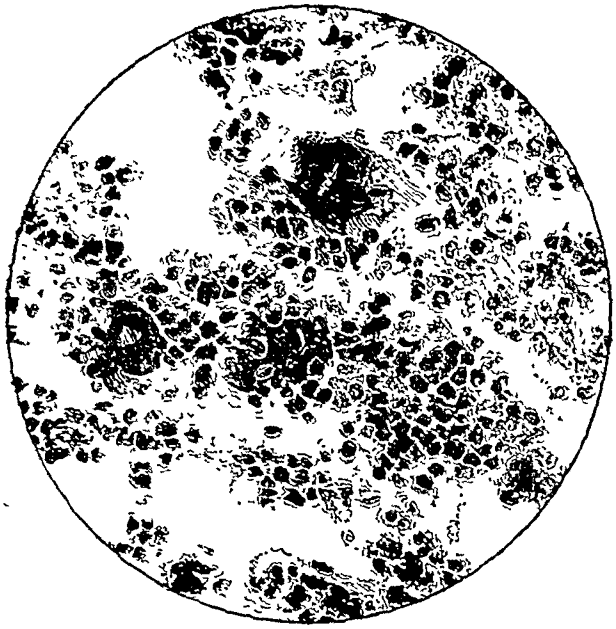


Figure 11.

By pushing the eye up and out and making firm pressure down and backwards under it at the inner orbital edge, a well marked projection be felt on the wall of the orbit. On the 16th, I exposed the orbital edge by an incision through the lid and attempted to remove the growth without enucleating the eye. I found it projected too far back in the orbit to do this successfully, and as I had not asked her permission to remove the eye, which was perfectly good as above shown, I contented myself with taking away as much of the growth as I could and sent it to Dr. Gray for examination

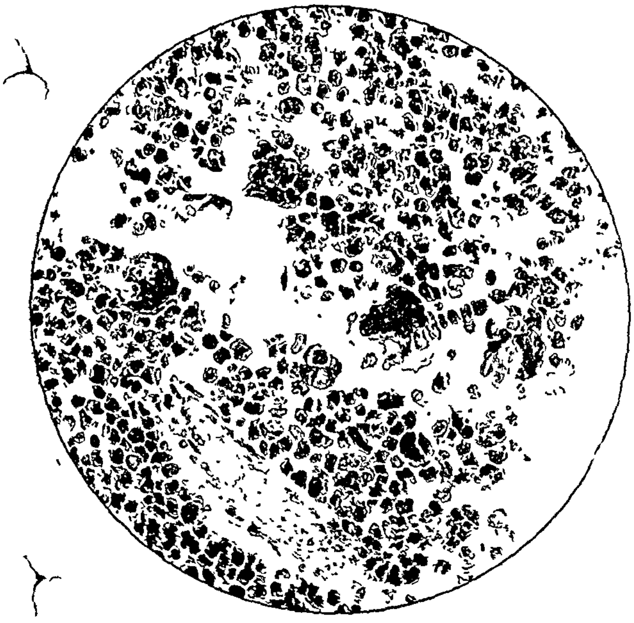
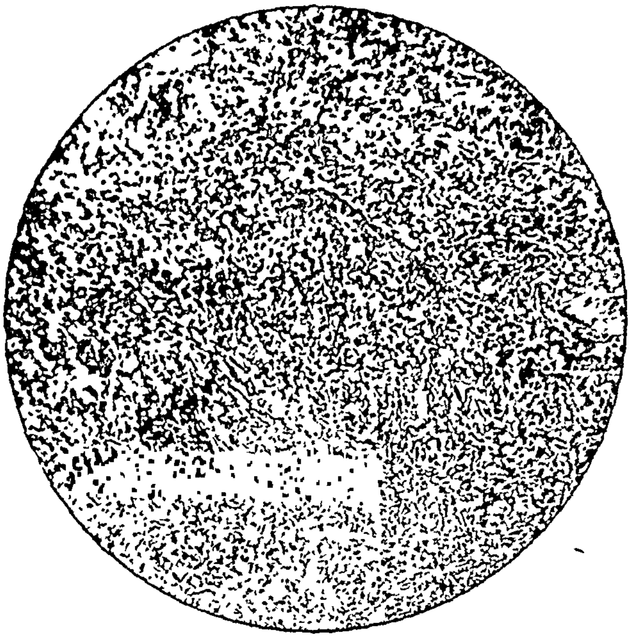


Figure 12.

He reported it was composed of fibrous tissue, was not malignant, but thought the eye ought to removed, so as to thoroughly enucleate the remains of the growth. On March 29, I again operated by removing the eye and tumor as far back as I could. I found it extended to the sphenoidal fissure and possibly passed into the cranial cavity, as I am satisfied I simply amputated the growth at the bottom of orbit instead of removing it in toto. I sent this also to Dr Gray and asked him to make a report and give me sections I also sent the eye, thinking it might prove valuable for microscopic examination, being almost normal. I saw the patient again on April 27 and found no signs of the tumor in the orbit. Whether she will have a recurrence I cannot say with certainty, but think it probable.

Dr. Gray reported as follows, sending photos to illustrate his report:



SPECIMEN C.—Figure 13.—Soft Fibroma of Orbit.

This growth is made up of two portions; a central zone composed of very fine dense fibres, which have undergone some degeneration, probably due to pressure, and an outer zone composed of small and large bands of dense fibrous connective tissue running in all directions; the connective tissue of the outer zone is very rich in nuclei and very vascular; the nuclei are composed of small round and small spindle cells. Some of the blood-vessels of the outer zone have well formed walls, but the majority are simple channels, well defined, with sometimes a single layer of cells forming their walls. Figures 13 and 14 show portions of the central and outer zones. Figures 15 and 16 show the richly nucleated fibrous outer zone, with the small blood channels. Figure 17 shows a very richly nucleated portion with two of the larger blood channels, whose walls are ormed by a single layer of cells.

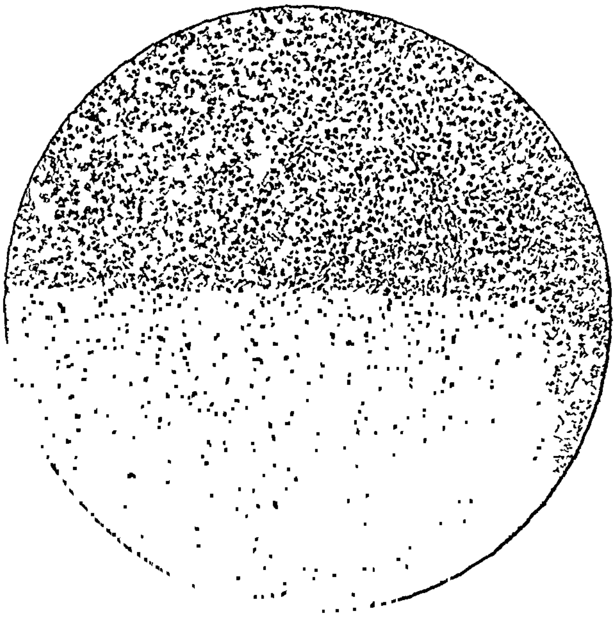


Figure 14.

Case 4.—Tuberculous Growth of Orbit.—(Report given me by Dr. Dunn.) Mary, aged 16, first had eye trouble in August, 1891, no clear history of course but probably traumatic. First seen in May, 1892. Protrusion of left eye, apparent paralysis of left upper lid. Tangent to cornea O. S. 7 mm., in advance of tangent to anterior surface of cornea of O. D. Movement of the eye impeded in all directions. Diplopia when patient looks to the left. V. = 20-30. No inflammatory symptoms, overfilling of vessels over the insertion of external rectus O. S. No pain upon pressure upon ball. Severe neuralgic attacks about the eye. Just below external angle of the orbit, contiguous with the bone can be felt a hard, firm though perhaps slightly elastic, immovable growth, which extends back into the orbit. The width and thickness of the portion of the growth that can be felt is about that of a lead pencil. To the touch, so hard, incompressible and immovable was this part of the growth, that it suggested osteoma.

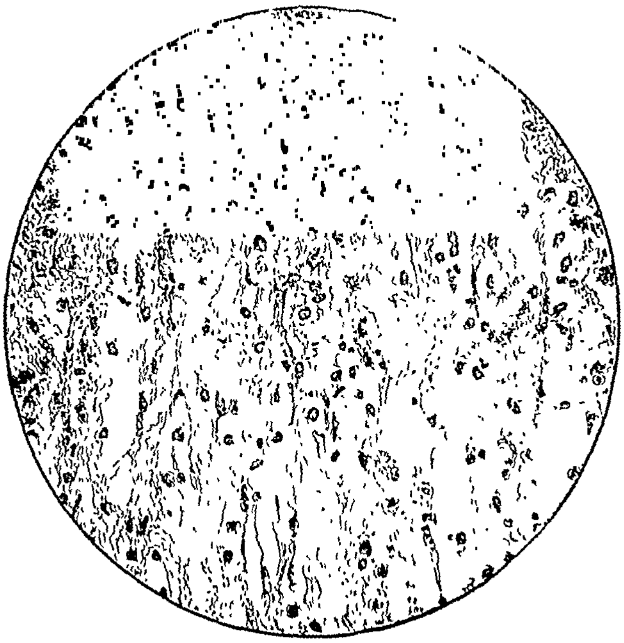


Figure 15.

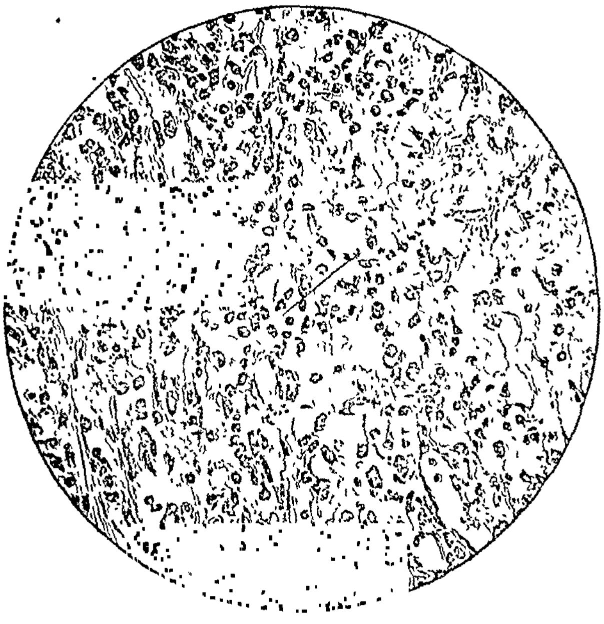


Figure 16.

In [illegible] painful on pressure. Operation, outer canthus [illegible] downward incision, about 1 inch; flap held [illegible] Tumor found adherent to the edge of the orbit, and to the periosteum of the orbital plates of the malar, superior maxilla and sphenoid. Origin near entrance of optic nerve into orbit; but not from optic fibrous sheath. Adherent to external rectus. Eye saved; vision good. Wound healed by first intention. Probably internal squint, due to cutting the external rectus.

This growth was peculiar in shape. It resembled a small pear which had been compressed, the base at the orbital edge, the apex and stem far back in the orbit. It was about three quarters of an inch wide at the base and tapered to a point with a long cord-like projection about three quarters of an inch long. The length of the growth itself was more than an inch. It was sent to Dr. Gray who gave me the following interesting report:

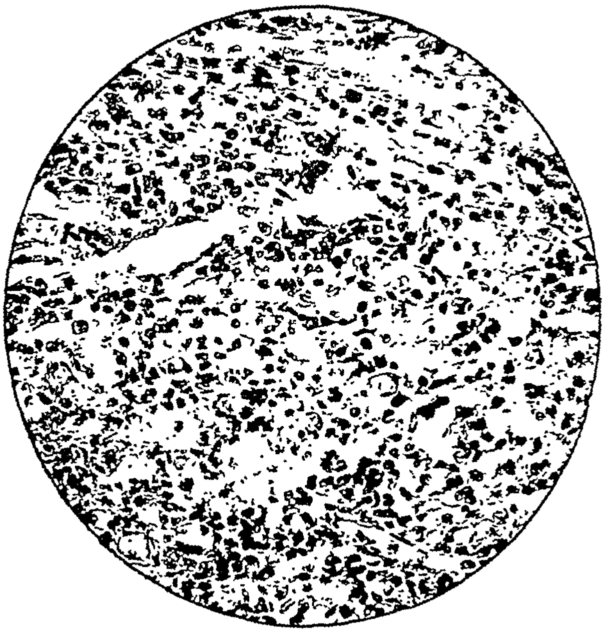
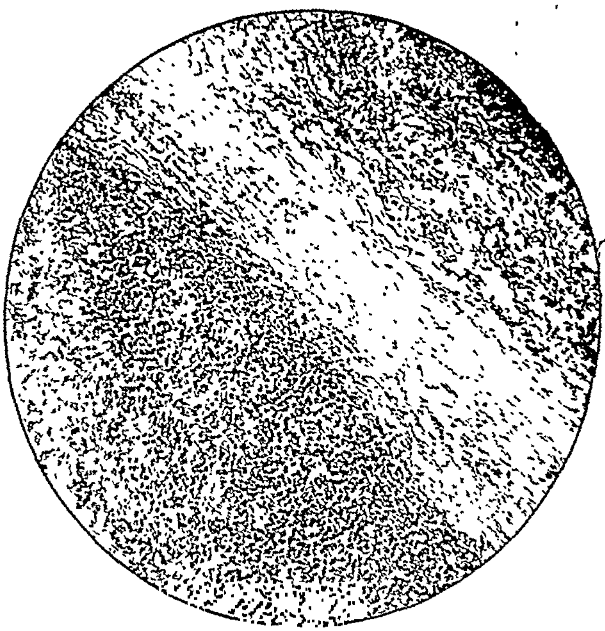


Figure 17.



SPECIMEN D.—Figure 18.—Miliary Tuberculosis of Orbit.

This specimen is composed of bands of very dense fibrous connective tissue; between the fibrous bands is an extensive lymphoid infiltrate, while throughout the tissue are numerous aggregations of these cells, forming nearly typical miliary tubercles. These cell aggregations differ from the typical tubercles in not containing giant cells. The tissue contains giant cells however, but they are only found far removed from the tubercles among the cells infiltrating the fibres.

Repeated attempts at staining failed to demonstrate tubercle bacilli in the tissue.

Fig's. 18 and 19 show the lymphoid infiltrate between the connective tissue fibres.

Fig. 20 shows two of the cell aggregations forming the so-called miliary tubercles.

Fig. 21 one of the tubercles more highly magnified.

Fig. 19 also shows two giant cells imbedded in the infiltrating cells.

Fig. 22 one of the giant cells more highly magnified.

In case 1 the growth seems to have started from the ciliary body between the superior and external rectus, and gradually involved other portions of the uveal tract, but at no time did it perforate the coats of the eye, as far as could be determined macroscopically, but the microscope shows it had extended through the sclerotic. As a melanotic tumor is among the rarer forms of intraocular growths I considered it of sufficient interest to present here.

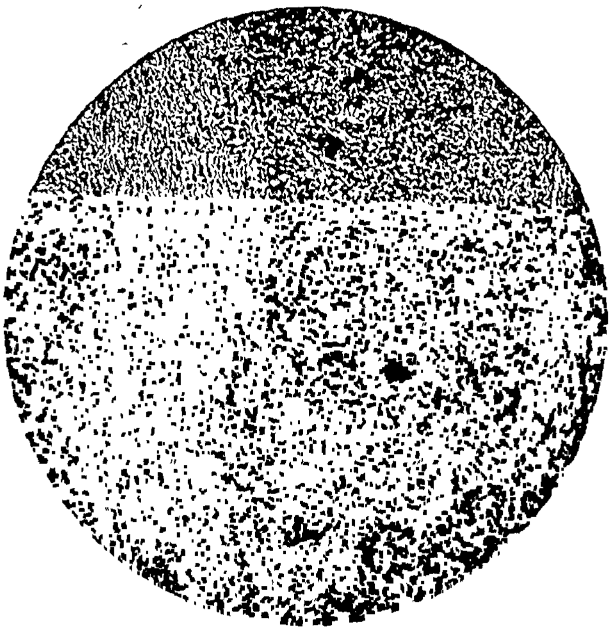


Figure 19.

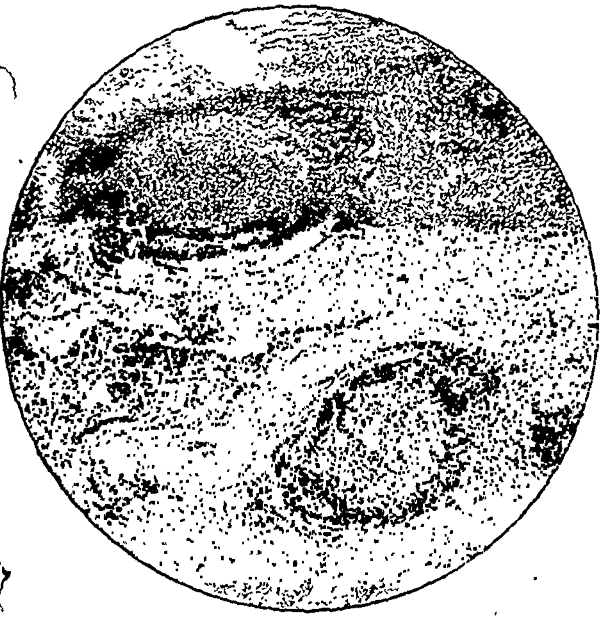


Figure 20.

Case 2 was seen at too late a stage of the development of the neoplasm to determine its point of origin with certainty, but it probably developed in the subconjunctival tissue below the eyeball, as even when the enucleation became imperative, the eye was perfectly healthy, and the *tumor had no attachments to the latter except by a band* of tissue uniting it to the sclero-corneal margin. It was a purely extra-ocular growth, developing in the loose subconjunctival tissue and enveloped in a dense connective tissue capsule, which whilst connected with the orbital walls completely *isolated the tumor from the deep orbital tissues.*

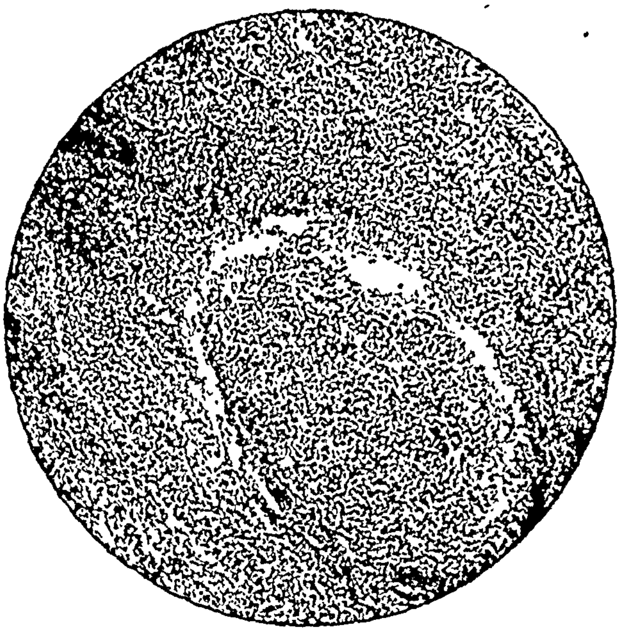


Figure 21.

Case 3 is of interest from the fact that it was fibroid apparently originating from the orbital portion of the superior maxilla, as this was the only point of close attachment, except at the bottom of the orbit, where it seemed attached to the sphenoid, if it did not pass into the cranial cavity.

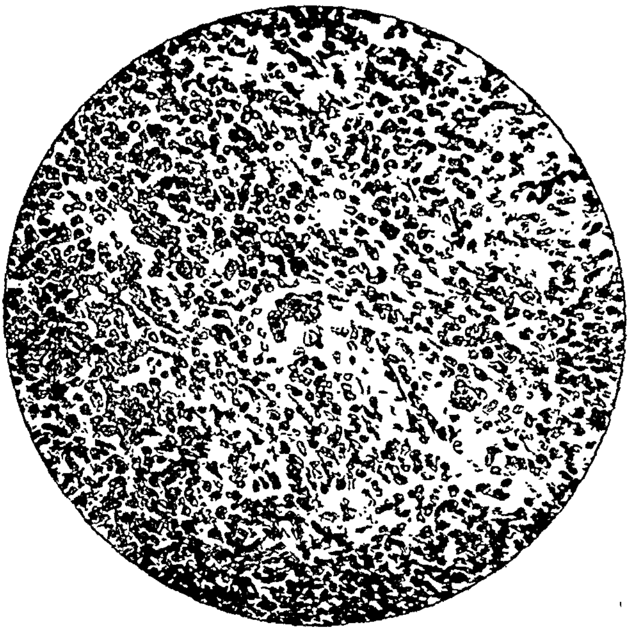


Figure 22.

There was no evidence of its originating from any of the neighboring cavities, and had no attachments to any of the contiguous bony structures.

Case 4, a tuberculous growth as reported by Dr. Gray, was to me different from any orbital tumor I had ever seen. Its point of origin could not be determined, but it seemed firmly attached to the outer and lower orbital wall, and after its marginal adhesions had been freed, it was easily enucleated with knife handle and finger. I assisted Dr. Dunn in the operation, and I found little trouble in tearing up the attachments, after I was able to get my finger behind it. It seemed to be encapsulated and came away solidly and with perfect contour. I suppose others have seen similar orbital growths, but I can find little or nothing in regard to them in the literature accessible to me. How a growth microscopically analogous to, if not identical with miliary tubercle could develop in such a subject, I do not understand.

The girl is an exceptionaly stout, sturdy, hearty individual with no signs of disease of any other organ, a picture of perfect health.

This fact and the rarity of this form of orbital tumor makes the case a particularly interesting one.

In conclusion, I wish to express my appreciation of Dr. Gray's excellent work in his part of this contribution to the proceedings of the Section, as without his help my record of these cases would have had little interest.

I have also to thank Dr. Dunn for writing up the cases he operated on at the clinic, especially as one of them, case 4, is the most interesting one presented.

EARLY NATIONAL LEGISLATION ON THE SUBJECT OF QUARANTINE.

BY STEPHEN SMITH, M.D.,

OF NEW YORK.

(Concluded from page 412.)

During the summers of 1796 and 1797 the yellow fever again prevailed widely and increased the public alarm by the extension of its area and the fatality of its attacks.

On the opening of the Fifth Congress, at Philadelphia, November 23, 1797, the President, John Adams, commenced his speech to the Houses as follows:

> "I was for some time apprehensive that it would be necessary, on account of the contagious sickness which afflicted the city of Philadelphia, to convene the national legislature at some other place. This measure it was desirable to avoid, because it would occasion much public inconvenience and considerable public expense, and add to the calamities of the inhabitants of this city, whose sufferings must have excited the sympathy of all their fellow-citizens; therefore, after taking measures to ascertain the state and decline of the sickness, I postponed my determination, having hopes, now happily realized, that, without hazard to the lives or health of the members, Congress might assemble at this place, where it was next by law to meet. I submit, however, to your consideration whether a power to postpone the meeting of Congress, without passing the time fixed by the Constitution, upon such occasions, would not be a useful amendment to the law of 1794."

In the address of the House in response to the speech of the President, which it was at that time customary to make, the subject was noticed as follows:

> "While our sympathy is excited by the recent sufferings of the citizens of Philadelphia, we participate in the satisfaction which you are pleased to express, that the duration of the late calamity was so limited as to render unnecessary the expense and inconvenience that would have been incident to the convention of Congress in another place, and we shall readily attend to every useful amendment to the law which contemplates the event of contagious sickness at the seat of government."

Congress does not seem, however, to have taken any action at this session.

During the summer of 1798 yellow fever again appeared, and this time it attained the proportions of a national scourge. It prevailed at Portsmouth, N. H.; Boston and Salem, Mass.; Westerly, R. I.; Hartford, Stonington, New London and Norwalk, Conn.; New York; Bridgeton and Woodbury, N. J.; Philadelphia, Marcus Hook and Chester, Pa.; Wilmington, Christina, Duck Creek and New Castle, Del.; Baltimore, Md.; Norfolk, Petersburg and City Point, Va.; Charleston, S. C.

At the opening of the third session of the Fifth Congress, December 8, 1798, President Adams thus addressed the two Houses:

> "While with reverence and resignation we contemplate the dispensation of Divine Providence in the alarming and destructive pestilence with which several of our cities and towns have been visited, there is cause for gratitude and mutual congratulations that the malady has disappeared, and that we are again permitted to assemble in safety at the seat of government for the discharge of our important duties. But when we reflect that this fatal disorder has within a few years made repeated ravages in some of our principal seaports, and with increased malignancy, and when we consider the magnitude of the evils arising from the interruption of public and private business, whereby the national interests are deeply affected, I think it my duty to invite the legislature of the Union to examine the expediency of establishing suitable regulations in aid of the health laws of the respective States; for, these being formed on the idea that contagious sickness may be communicated through the channels of commerce, there seems to be a necessity that Congress, who alone can regulate trade, should frame a system which, while it may tend to preserve the general health, may be compatible with the interests of commerce and the safety of the revenue."

Petitions were prepared to be laid before Congress, both in Philadelphia and New York, asking aid of the general government. The Philadelphia committee went so far as to propose non-intercourse with the West India ports during the dangerous months of the season. The New York committee objected to such stringent measures, and a modified memorial was adopted. The health officer of New York, Dr. Richard Bayley, urged the formation of quarantine establishments at a proper distance from seaport cities, where ships could be examined and, if necessary, thoroughly cleansed and disinfected.

The subject was again brought before Congress by Mr. Smith, of Maryland, who was now chairman of the Committee of Commerce, as appears from the following extract from the Annals of Congress:

> "On Wednesday, January 23, 1799, Mr. Smith, of Maryland, from the Committee of Commerce, reported a bill respecting quarantine and health laws, which was read and committed.
>
> "On Monday, January 28, 1799, on motion of Mr. Smith, of Maryland, the House went into a committee of the whole, on the bill respecting quarantine and health laws; Mr. Rutledge in the chair.
>
> "The bill was read as follows:
>
> "SECTION 1. *Be it enacted, etc.*, That the quarantine and other restraints which shall be required and established by the health laws of any State, or pursuant thereto, respecting any vessel arriving in, or bound to, any port or district thereof, whether from a foreign port or place, or from another district of the United States, shall be duly observed by the collectors, and all other officers of revenue of the United States, appointed and employed for the several collection districts of such States respectively, and by the masters and crews of the several revenue cutters, and by the military officers who shall command in any port or station upon the sea-coast; and all such officers of the United States shall be, and they hereby are, authorized and required faithfully to aid in the execution of such quarantine and health laws, according to their respective powers and precincts, and as they shall be directed from time to time by the Sec-

retary of the Treasury. And the said Secretary shall be, and is hereby authorized, when a conformity to such quarantine and health laws shall require it, and in respect to vessels which shall be subject thereto, to prolong the terms limited for the entry of the same, and the report or entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries: *Provided*, That nothing herein shall enable any State to collect a duty of tonnage or impost without the consent of the Congress of the United States; *And provided*, That no part of the cargo of any vessel shall, in any case, be taken out or unladen therefrom otherwise than as by law is allowed, or according to regulations hereinafter established.

"Sec. 2. *And be it further enacted*, That when, by the health laws of any State, or by the regulations which shall be made pursuant thereto, any vessel arriving within a collection district of such State shall be prohibited from coming to the port of entry or delivery by law established for such district, and it shall be required by such health laws that the cargo of such vessel shall, or may be, unladen at some other place within or near to such district, the collector authorized therein, after due report to him of the whole of such cargo, may grant his special warrant or permit for the unloading and discharge thereof, under the care of the surveyor, or of one or more inspectors, at some other place where such health laws shall permit, and upon the conditions and restrictions which shall be directed by the Secretary of the Treasury, or which such collector may, for the time, reasonably judge expedient for the security of the public revenue: *Provided*, That in every such case all of the articles of the cargo so to be unladen shall be deposited, at the risk of the parties concerned therein, in such public or other warehouses or inclosures as the collector shall designate, there to remain under the joint custody of such collector and of the owner or owners, or master or other person having charge of such vessel, until the same shall be entirely unladen or discharged, and until the goods, wares or merchandise which shall be so deposited may be safely removed, without contravening such health laws; and when such removal may be allowed, the collector having charge of such goods, wares or merchandise may grant permits to the respective owners or consignees, their factors or agents, to receive all goods, wares or merchandise which shall be entered and whereof the duties accruing shall be paid or secured according to law, upon the payment by them of a reasonable rate of storage, which shall be fixed by the Secretary of the Treasury for all public warehouses and inclosures.

"Sec. 3. *And be it further enacted*, That there shall be purchased or erected, under the orders and with the approbation of the United States, suitable warehouses, with wharves and inclosures, where goods and merchandise may be unladen and deposited, from any vessel which shall be subject to a quarantine, or other restraint, pursuant to the health laws of any State as aforesaid, at such convenient place or places therein as the safety of the public revenue and the observance of such health laws may require: *Provided*, That the site of all such warehouses and wharves, with such other adjoining lands as may be necessary for the public uses hereby authorized, shall be ceded to the United States by the State wherein the same shall be.

"Sec. 4. *And be it further enacted*, That when by prevalence of any contagious or epidemical disease in or near the place by law established as the port of entry for any collection district, it shall become dangerous or inconvenient for the collectors or other officers of the revenue employed therein to continue the discharge of their respective offices at such ports, the Secretary, or in his absence, the Comptroller of the Treasury of the United States, may direct and authorize the removal of the collector, and the other officers employed in his department, from such port to any other more convenient place within, or as near as may be to such collection district, where such collector and officers may exercise the same authorities, and shall be liable to the same duties, according to existing circumstances, as in such lawful port or district; and of such removal, public notice shall be given as soon as may be."

The following discussion ensued:

"Mr. Livingston, of New York, moved to strike out the proviso at the close of the third section, as it might, in his opinion, be productive of delay in some cases, and of danger in others. Some of the State legislatures might not be in session before the evil intended to be guarded against returns upon us, and it might interfere with the jurisdiction of towns or cities of which those sites form a part. He knew that there were some gentlemen in the House who think no money ought to be expended by the United States for any public works until cessions of the jurisdiction are made. This may be proper, with respect to forts and magazines with which State jurisdiction might interfere; but this being merely a civil jurisdiction, and so far from interfering with any State jurisdiction, is to coöperate with the State regulations, gentlemen may vote for striking out this clause, without parting with their favorite doctrine.

"Mr. Dayton, of New Jersey, trusted the motion would not prevail. It was negatived, there being only 23 votes in favor of it.

"Mr. Livingston, of New York, then moved to amend the bill by striking out the second line of the third section with the words 'and with approbation,' which was certainly surplusage. Agreed to.

"Mr. Waln, of Pennsylvania, said if it were proper to cede the land on which the warehouses are built, he did not think it would be to cede the sites of wharves to the United States. He did not think it right, for instance, to cede the jurisdiction of any wharves which might be built in the vicinity of this city to the United States. He, therefore, moved to strike out the words 'and wharves.'

"Mr. Sewall, of Massachusetts, hoped the gentleman from Pennsylvania would not insist upon this motion. No wharves would be erected where wharves now are; and if the United States are at the expense of erecting the wharves, they ought to have the jurisdiction of their sites, as well as of the sites of warehouses.

"This motion was negatived, there being only 12 votes for it.

"The committee rose and reported the bill, when Mr. Harper renewed the motion for striking out the proviso in the third section, for the reasons he urged in support of the former motion, and because this cession would be of no use to the United States; and after some few observations upon it, the motion was carried, 40 to 31.

"On motion of Mr. Sewall, of Massachusetts, the following section was added, repealing a law of the first session of the Fourth Congress, respecting quarantine:

"Sec. 5. *And be it further enacted*, That the act entitled '*An act relative to quarantine*,' passed in the first session of the Fourth Congress of the United States shall be, and the same is hereby, repealed.'"

January 29, 1799, the bill was read a third time and passed.

In the Senate an additional section was added, as follows:

"Sec. . *And be it further enacted*, That whenever in the opinion of the Chief Justice, or in case of his death or inability, of the senior associate justice of the United States, a contagious sickness shall render it hazardous to hold the next stated session of the said court at the seat of government, it shall be lawful for the Chief or such associate justice to issue his order to the marshal of the district within which the Supreme Court is by law to be holden, directing him to adjourn the said session of the said Court to such other place within the same or an adjoining district, as he may deem convenient; and the said marshal shall thereupon adjourn the said Court by making publication thereof in one or more public papers printed at the place by law appointed for holding the same, from the time he shall receive such order, until the time by law prescribed for commencing the said session. And the district judges shall respectively, under the same circumstances, have the same power, by the same means, to direct adjournment of the district and circuit courts within their several districts, to some convenient place within the same, respectively."

This amendment was concurred in by the House, and the bill, as amended, was passed.

It was approved February 25, 1799.

In 1799–1800 there was much alarm in Europe in regard to the spread of the plague, and stringent quarantine measures were adopted by the British Government. There was some apprehension that the pestilence would be imported into this country, and Congress was urged to consider the question. On Friday, February 28, 1800, Mr. Waln, of Pennsylvania, presented a memorial from the health office in Philadelphia, stating that in consequence of the plague having raged in Morocco, Great Britain had enacted very strict quarantine laws, but although the port of Philadelphia might be watched by all the vigilance in the power of the health office, there was no general law to keep that most dreadful scourge of the human race from being introduced into some ports of the United States. They prayed the attention of Congress thereto. Referred to the Committee of Commerce.

Wednesday, March 19, 1800, a memorial of the select and common councils of the city of Philadelphia was presented to the House and read, praying that Congress may take such precautionary measures to prevent the introduction of the plague, which has for some time prevailed in the countries bordering on the Mediterranean, as to their wisdom shall seem meet. Referred to the Committee on Commerce and Manufactures.

Friday, April 25, 1800, the Speaker laid before the House a letter from the Secretary of the Treasury, accompanying an estimate for an appropriation of moneys for carrying into effect the act respecting quarantine and health laws, which were read and ordered to lie on the table. No other action was taken, nor was the subject alluded to for upwards of two years.

On Friday, January 8, 1802, Dr. Samuel L. Mitchell, of New York, now for the first time a member of the House of Representatives, offered the following resolution:

"*Resolved*, That a committee be appointed to inquire and report whether any, and what, alterations are necessary to be made in the 'act respecting quarantine and health laws.'"

It was ordered that Mr. Mitchell, of New York; Mr. Eustis, of Massachusetts; Mr. Leib, of Pennsylvania; Mr. Archer, of Maryland; Mr. Lowndes, of South Carolina, be appointed a committee pursuant to the said resolution.

Dr. Mitchell was an active participant in the medical controversies in regard to the origin of yellow fever in New York. He was a strong advocate of non-contagion, and believed that pestilential diseases were frequently engendered on board of filthy ships. He did not, therefore, believe in quarantines for detention simply, but only for purification of ships. He was also an ardent believer in the efficacy of alkalies as an antidote to septic poisons, and hence advocated alkalies, vigorously applied, instead of fumigation.

In a letter to Dr. Richard Bayley, the health officer of New York, dated July 1, 1801, he concludes a history of quarantines with the following statement of his views:

"Vessels retain the pestilential because, 1, from their structure it is difficult to introduce a sufficiency of fresh air to waft away the infectious gas; 2, from the manner of their construction it is also exceedingly difficult to scrub and scour and cleanse them by lime and alkalies, as houses are purified; and 3, from the preposterous custom of pronouncing a vessel clean after she has been pumped out and fumigated with tar and brimstone; while in fact, she is as foul *after* being smoked as she was *before*. The negligence of navigators and owners of vessels on these points renders it absolutely necessary for public authority to interfere. All that I think necessary in the business is that the never-failing method of *house-cleaning* should be applied to *ship-cleaning* in the way that you have adopted with such happy success. And if the time shall arrive when sea-vessels shall be kept as clean as genteel habitations on shore, their crews and passengers will suffer as little by infection and pestilence; and then the dream of importing pestilential diseases from foreign countries will be forgotten or insisted on no more as a reality. And that this is not a mere conjecture but a practical fact, is confirmed by the experience of the Dutch navigators; for they, carrying with them to sea the habits of that precise and unequaled cleanliness which prevails on shore in the United Netherlands, are rarely or never troubled with the fevers, the plagues and the infectious distempers which incessantly harass the nastier nations of the earth."

The special object which Dr. Mitchell had in view in offering the above resolution seems to have been to give publicity to his opinions in regard to the virtues of alkalies as an antidote to septon (septic poisons). He says:

"The particular object aimed at is to cleanse ships and vessels by means of *alkaline salts and lyes*, and to explode the miserable and delusive practice of fumigation; in short, to apply the modes of *cleaning houses to the purification of ships*. This will reduce the quarantine of vessels *to the simple process of cleansing by alkalies*, and eventually remove from commerce most of the tedious and burdensome restraints under which it is now groaning. Science will have a glorious triump, and the American Government will set a noble and liberal example to the whole civilized world."

On Tuesday, March 9, 1802, the following petition was referred to that committee:

"A petition of sundry merchants residing in the city and State of New York, importers of cotton, hides, and other raw materials, for manufacture, was presented to the House and read, stating that the inconveniences and expense to which the petitioners are subjected by being obliged, under the quarantine laws of the said State, to unload and deposit for a limited time in every year, the said articles on Staten Island, and praying that they may be permitted to keep the same in the public storehouse of the United States erected on the island aforesaid, free from storage, during the period of such quarantine."

"*Ordered*, That the said petition be referred to the committee appointed on the 8th of January."

The committee made no report at that session.

At the following session it appears that on the 15th of February, 1803, the House referred to that committee the following resolution:

"That provision ought to be made by law for the regulation of quarantine within the District of Columbia." Finally, on the 25th of February, 1803, Dr. Mitchell submitted his report, which is remarkable for its intelligent recognition of the unhealthfulness of ships, and the better methods of purification. The report is as follows:

The term "quarantine" has been used, in the commercial world, to denote the detention of ship or vessel at a convenient place, some distance from port, for the space of forty days, for the purpose of freeing her from contagion and infection, supposed to have been transported in her from foreign places; latterly it means any shorter number of days. Under the persuasion that their own cities and habitations were exempt from such contagion and infection, and that these destructive agents were always introduced from remote places, less salubrious than their own, mankind have taken great pains to protect themselves from external attacks of the distempers which they believed to be prevalent among their neighbors or strangers. By the presumption that contagion was frequent in many foreign settlements, and was readily transported from country to country by commercial communications, have the nations of the earth been influenced in framing the rules and the means of restraint imposed upon their mutual intercourse. They have often looked on each other as lazars or lepers, and treated visitors and passengers at certain seasons as such.

The importance of the subject, as well to the commerce and revenue of the United States as to the happiness and security of her citizens, has induced your committee to look into it carefully. They have endeavored to gather facts and to deduce therefrom correct conclusions; and, upon the most complete investigation which they have been able to give the subject, they are decidedly of the opinion that the ideas generally entertained concerning quarantines are very erroneous.

It is true that certain diseases which afflict mankind, such as small-pox, for example, may be transferred from one person to another; but of late doubts have been entertained in the minds of some of the best observers, of such as have had great opportunities for knowing and judging, whether the like contagiousness is true of yellow fever and the fever infecting ships.

Sickness of distant places and the danger arising from any intercourse with them is one of the trite themes of remark almost everywhere. At the same time few people can be brought to acknowledge the noxiousness of the soil and atmosphere of the place of their permanent residence. Therefore the inhabitants of the West India Islands are positive that they import yellow fever from Boston, New York, Philadelphia, and Baltimore; while the inhabitants of those cities. respectively, have been quite as decided in their conviction that the same distemper is brought to them from Cape Francois, Kingston, Havana, and Demerara. Both sides are equally positive and both about equally wrong. During the 700 or 800 years since the days of the crusades these erroneous sentiments have been indulged in Christendom. Great embarrassments have been experienced from them; and at this day they seem to be increasing. It is an object worthy the attention of the national legislature, to correct within these States this growing evil.

It is apparent to your committee that most, if not all, the infectious diseases which at times afflict the crews of sea vessels arise *not* from the ports or countries they have visited but from causes which exist *within* the *vessel*. Human beings inhabiting such crowded situations engender and communicate diseases which increase in frequency and malignity by sloth and uncleanliness. Now a ship is a human habitation, and sometimes the crew is very numerous, and usually prone to grow unclean. Frequently this uncleanness accumulates to a disgusting degree and turns to poison. The poison stirs up pestilence. Arrivals from Europe have given recent and woful proofs of this.

But a ship is not merely a human dwelling; she is also a magazine or storehouse. Within her sides, as in a common receptacle, are collected many sorts of things prone to perish and corrupt.

Beef, fish, pork, hides, and other animal substances frequently taint the hold that contains them with their deleterious vapors. This tendency to putrefy is often increased by the scanty quantity and weak quality of the Liverpool salt with which they are put up. Their provision spoiling during the West India voyages, and rotting on shipboard (which is a well-known case in hot climates), render the berths and quarters of the men unhealthy, the crew sickens from the operations of such mischievous agents, and some of them are soon destroyed. The evil is increased when they are obliged to feed on such tainted or spoiled meat as a part of a daily ration. Not only animal substances, but onions, coffee, Indian corn, and various other vegetables, which are transported from country to country, contribute, by their occasional decay, to render unhealthy the bottoms in which they are carried. From these causes it is well known that provisions carried between our ports and the southern islands degenerate, and frequently the vessels conveying them are found in a very filthy and unclean condition. From the corruption of their cargoes and the uncleanness of the crews, ships may be filled with a venomous atmosphere, and the timbers, planks, bedding, etc., be charged or impregnated with the inbred mischief. Many ships belonging to the United States afford instructive examples of fevers caused on board by the exhalations from putrid provisions on their outward-bound voyages. A corrupting barrel of beef has done great injury within a vessel sailing from Great Britain to the United States.

It is a remarkable fact that ships and vessels, though so prone to become foul and pestilential, are seldom cleansed in so complete a manner as they ought to be. From the time that they are launched to the day of their condemnation few or none of them are perfectly purified. Year after year this foulness increases, insomuch that old ships and vessels are usually the most nasty and loathsome of human habitations.

Ships being thus, from their structure, tenants, and cargoes, peculiarly liable to accumulate poison, and being rarely or never cleared out, as they ought to be, carry that infectious matter engendered within them to all parts of the world, and by a curious and unhappy mistake the pestilence produced in one of these floating mansions has been almost always referred to the place from which she last came, though that place commonly has not had any kind of agency in the matter.

Hence, it will appear to every reflecting mind that the common mode of quarantine by detaining a foul ship at anchor will rather increase than remedy the evil intended to be guarded against. Bills of health are nugatory or deceitful; for if a clean ship sails from a sickly place a foul bill of health will not really indicate an unfavorable state of health on board, nor prove the crew to be affected with the distemper that prevails in the port she left; nor will a clean bill that the people in a pestilential vessel are in good health or that she is in a safe or fitting condition to be admitted to port. Consequently, bills of health are either useless or worse than nothing. With the Dutch, who are remarkable for clean ships, and who carry the system of purification on board their vessels to a greater extent than any other nation of Europe, quarantine is a mere form only. Pestilence can neither be bred nor continued on board the vessels of the Hollanders.

Instead of the rigorous rules of quarantine adopted in the United States, your committee are of the opinion the mischiefs intended to be guarded against thereby might be more effectually prevented by less injurious means. It is remarkable how little pains are taken to accomplish the complete and healthy purification of ships. None of the regulations which have hitherto been made direct the method of performing it or insist upon it with sufficient energy. A ship cannot be deemed wholesome or fit for a voyage merely because the hold and windows have been opened after she is unloaded, her decks washed and scraped, and the bilge-water pumped out. Nor will the smoking her out with brimstone, tar, or nitrous and muriatic vapors render her a suitable habitation to preserve the health and lives of men. As well might it be pretended that infected rooms, beds, and clothes could be purified by merely letting in the air and setting fumigating mixtures into action; when all domestic experience teaches that soap, lye, and lime are the only sure and efficacious auxiliaries in all cases of difficulty and danger.

It is a lamentable fact that, under the present quarantine regulations, in most places so little regard is paid to cleaning a fœtid and infectious ship, provided she does not transgress the rules *of the port where she happens to be*, by proceeding beyond her prescribed limits. She may, nevertheless, weigh anchor and go, in her foul condition, to *any other port or city* without the least impediment. By this miserable practice is the poison of plague, pestilence, or yellow fever produced, continued, and multiplied, by natural and necessary process on shipboard, and carried to all the places she visits; and while this dreadful custom prevails, there will not probably be an end of the rumors of imported contagion, and all the consequent terror and stagnation of business at home and of detention of ships and expense of quarantine abroad. The recent accounts of the severe quarantine of a hundred days and more imposed upon American vessels in some of the principal ports of Spain, must fill every friend of our country with regret. It amounts to an almost total prohibition of our trade with those cities, and is viewed by your committee as countenanced by false alarms and unfounded suggestions prevalent among our own citizens. In order to prevent these commercial restraints, in some degree, it is necessary to form our health laws upon more scientific principles, and to regulate our marine and naval intercourse upon maxims more accordant with the means to preserve domestic neatness and household purity on shore.

Considering the great influence of names over human thought and action, and the high importance of a correct nomenclature for legal and scientific purposes, it were to be wished that the term quarantine should be erased from the statute-books of the Union and of each particular State. Instead of ordering a vessel *to perform a quarantine*, she ought *simply to be directed to be made clean.* Such foul and infectious vessels, with sickly crews, should be prevented from coming to our cities or proceeding on any voyage in that situation. Nor is the matter so difficult of execution as many have imagined. When a vessel arrives from any foreign port, let her come to at some convenient place. If any are sick on board, let them be landed and all uncleanness put away. If she has any spoiled or putrefied provisions or merchandise on board, let them also be taken out. Then cause her to be scoured and cleaned in every part with pure water, soap, sand, alkaline, lye, lime, and other sweetening and purifying substances; after which the admission of a plenty of clean and good air will complete the work. These are the methods we use with success to cleanse our habitations on the land. They are equally applicable to habitations on the water, and it is necessary to scour the latter as frequently and as thoroughly as the former. But as individuals who own and navigate vessels are too careless or forgetful to cause them to be frequently and efficaciously cleansed, there is a necessity for public authority to interfere. This interference should be exerted to purtefy every foul and pestilential vessel that enters a port, and not keep her idly and injuriously riding at anchor. Quarantines may thus be shortened from forty days to *forty hours. Indeed, they would be nothing more than a thorough ship-cleaning.*

When the civilized world shall, with one accord, enforce the regular and exact purification of ships, there will be nothing on board to turn to pestilential or any other fever-producing agent, and all the inquiry necessary, when a vessel arrives, will be whether she is clean or dirty. As the latter is almost always the fact, she should be cleansed by public authority, and never suffered to go to sea, no more than enter a port, in a foul internal condition. There would then be no vessels afloat carrying infection with them from place to place, and the tales about contagion from foreign ports would gradually die away and cease to agitate society, as they now do, to the great detriment of our trade, and disgrace of commerce, medicine, and police.

After taking this comprehensive view of the subject, it would have been pleasing to the committee to have proposed something more in detail for the treatment of vessels arriving at the port of Alexandria, conformably to these principles, but the advanced period of the session prevents their offering more at this time to the House. They content themselves, therefore, for the present, with calling attention to this important subject and presenting for adoption, as a temporary expedient, a bill for extending the quarantine laws of Virginia to the territory of Columbia.

Yellow fever prevailed in the principal commercial centers during the years 1802, 1803, 1804 and 1805, but not with the fatality that it exhibited in 1798. During this period the discussion in regard to the importation and contagiousness of the fever was very exciting, and was participated in by the leading physicians of the time. Dr. Benjamin Rush, of Philadelphia, led the advocates of the local origin and non-contagiousness of the fever, and Dr. David Hosack, of New York, headed the opposition. The former class had the larger number of followers and exerted the greatest popular influence. The opinion became very general that yellow fever depended upon local filth, and that it was not propagated by any infectious or contagious properties. In the light of these opinions, quarantine rules and regulations were not only useless, but were unjustifiable restraints upon commerce and travel. Dr. Rush said of quarantines: "They originated in error; millions of money have been wasted by them; thousand of lives have been sacrificed by them." Potter, an equally zealous opponent of quarantines, asserted that he "anticipated the era when our government would make it a national concern; when a consular convention at least with the nations commercially connected with us, will put a period to a system which is a reflection upon our philosophical character."

Dr. Hosack, on the contrary, not only strongly advocated quarantines, but took high ground in favor of placing them under the management of the general government.

The opinions of Rush found a supporter in Mr. Jefferson, as appears from the following card written in 1807 and his annual message of 1805. The card is dated at Monticello, September 8, 1807, and was written to Mr. Crawford. It is as follows:

"Thomas Jefferson presents his compliments to Mr. Crawford, and his thanks for his Observations on Quarantines, which he has read with great pleasure. Not himself a friend to quarantines, nor having confidence in their efficacy, even if they are necessary, he sees with pleasure every effort to lessen their credit. But the theory which derives all infection and ascribes to unseen animals the effects hitherto believed to be produced by it, is, as yet, too new and unreceived to justify the public servants in resting thereon the public health, until time and further investigation shall have sanctioned it by a more general confidence."

In his annual message dated December 2, 1805, President Jefferson says:

"In taking a view of the state of our country, we, in the first place, notice the late affliction of two of our cities under the fatal fever which, in latter times, has occasionally visited our shores. Providence, in his goodness, gave it an early termination on this occasion, and lessened the number of its victims which have usually fallen before it. In the course of the several visitations of this disease, it has appeared that it is strictly local, incident to cities and on the tide-waters only, incommunicable in the country either by persons under the disease or by goods carried from diseased places; that its access is with the autumn and it disappears with the early frosts. These restrictions within narrow limits of time and space give security even to our maritime cities during three-fourths of the year, and to the country always. Although from these facts it appears unnecessary, yet, to satisfy the fear of foreign nations, and cautions on their part, not to be complained of in a danger whose limits are unknown to them, I have strictly enjoined on the officers at the head of the customs to certify with exact truth for every vessel sailing for a foreign port the state of health respecting this fever which prevails at the place from which she sails. Under every motive from character and duty to certify the truth, I have no doubt they have faithfully executed this injunction. Much real injury has, however, been sustained from a propensity to identify with this endemic, and to call by the same name fevers of very different kind, and which have been known at all times and in all countries, and never have been placed among those deemed contagious. As we advance in our knowledge of this disease, as facts develop the sources from which individuals receive it, the State authorities charged with the care of the public health, and Congress with that of the general commerce, will become able to regulate with effect their respective functions in those departments. The burdens of quarantine are felt at home as well as abroad; their efficacy merits examination. Although the health laws of the States should be found to need no present revisal by Congress, yet, commerce claims that their attention be ever awake to them".

After this period the danger from yellow fever epidemics became less and less threatening, and the National legislature was seldom appealed to for aid in its prevention, during the early part of the century.

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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A few years ago, when the mastoid process was first opened for the liberation of pus contained within its walls, it was regarded as an extremely hazardous procedure, necessitating the highest skill, and unwarrantable except as a *dernier resort.*

As the anatomical and pathological bearings of the disease become better understood, the operation assumed a less formidable appearance, and the process is now opened sufficiently early to save most cases of this nature.

Intra-cranial lesions following aural affections have a somewhat similar history, but our knowledge and plans of procedure are still in a primitive condition, and not sufficiently crystallized to warrant a sense of security, when radical and positive steps appear to be indicated.

With the hope of somewhat systematizing our present knowledge of this subject, I have been to the pains of collecting the data of 169 cases bearing on the topic, and no case has been admitted to this series unless one of two circumstances has been fulfilled:

1. The patient must have had an ear difficulty,

resulting in intra-cranial trouble, death, and an autopsy; or,

2. The patient must have had an ear difficulty, resulting in intra-cranial trouble, and the intra-cranial cavity been exposed by operation.

By carefully systematizing these cases, I think a fairly comprehensive idea of the subject may be obtained.

Case 1.—Treated by Frank Allport, of Minneapolis, Minn. Mrs. C. W., aged twenty-five. At three years of age she had scarlet fever, resulting in acute purulent otitis on the left side, which subsequently became chronic. The suppuration continued up to her death. Years ago she suffered an acute exacerbation with a mastoid pain, relieved by counter-irritation over the mastoid. Since then she has had occasional ear-aches, but nothing decisive in its character until January 28, 1883. A few days previously she contracted a severe cold, centering in her ear, and accompanied by intense ear-ache.

I found a meatus almost imperforate from bony hypertrophy. Consequently, only the extreme outer portion of the canal was visible; therefore, the middle ear could be neither seen nor treated. The discharge was offensive, and evidently largely retained, owing to the hypertrophy of the meatus. There was no pain, redness or swelling of the mastoid. Pulse and temperature slightly advanced.

Rest, quiet and hot water douching were employed.

Feb. 2. The pain being worse and the meatus inflamed, the tissues lining the meatus were freely incised down to the bone. Improvement followed.

Feb. 10. The pain had been increasing, and was now excessive. It extended from the ear to the temporal and parietal regions, but did not involve the mastoid.

Feb. 13. Drs. Spring and Fulton were called in consultation. It was decided to open the mastoid. This was done Feb. 14, and large quantities of very fetid pus evacuated.

Great improvement followed. The discharge from the ear was much diminished.

Feb. 16. The pain in her head returned, and was referred principally to the frontal and parietel regions.

Feb. 22. She had a chill, during which, a sudden and free gush of pus occurred from the mastoid opening, after which she grew rapidly better.

Feb. 27. The pain recurred, and continued until March 1, when it subsided upon another free and sudden gush of pus from the mastoid opening.

March 7, the same phenomenon recurred; March 14, the severe pain returned; March 16, Drs. Spring, Fulton and myself met in consultation, and decided to enlarge and lower the mastoid opening, fearing the drainage was insufficient.

This was done March 17. In the course of the operation, a sinus was discovered within the boundaries of the mastoid opening, leading into the cerebellum. The sinus was about one-fourth of an inch wide.

March 20. Drs. Spring, Fulton, Abbott, Johnson and myself met in consultation.

March 23. Severe pain in the frontal and parietal regions appeared. In the evening she had a chill.

March 24. Some delirium. The same physicians were called in consultation. The blunt canula of an aspirating syringe was inserted into the sinus and into the cranial cavity. No pus was found. Pain, restlessness and nervousness now continued until the termination of the case.

March 28. In pressing upon the temple, it was noticed that pus was forced into the mastoid opening. A sinus was found extending over the squamous portion of the temporal bone, and terminating in the region of the zygomatic arch. The sinus was kept drained with a tube, and washed with peroxide of hydrogen.

April 2. A peaceful death.

Her pulse and temperature were never very high. Her pulse ranged from 80 to 108, and her temperature from 98½° to 103½°. It did not often exceed 101°.

Autopsy.—Drs. Spring, Fulton, Abbott, Johnson, Hill, Wells and myself being present. Extensive necrosis was found outside of the skull, extending from the outer surface of the mastoid to the squamous portion of the temporal bone, extending over the frontal bone and to the superior maxilla down below the zygomatic arch. The soft parts were separated from the bone over this entire area, and considerable quantities of pus followed the diseased tract.

We found that the sinus we had discovered in the course of the operation did, in fact, open into the cerebellum through the inner mastoid plate, but no pus had accumulated at this region.

The outer portion of the squamous portion of the temporal bone was almost entirely destroyed by necrosis. No fluctuation, redness or swelling indicated this before death. A large opening existed in the squamous bone, connecting directly with the cranial cavity. The external diffused abscess at this point extended from the entire squamous portion of the temporal bone down to below the zygoma, and as far forward as two inches in front of the ear. Extending over this territory, the soft parts were completely lifted from the bones, which were generally blackened from necrosis.

The inner surface of the temporal bone was badly necrosed, especially at four points—1, the squamous portion; 2, the upper part of the petrous portion; 3, the petrous portion corresponding to the middle and internal ears; and 4, the inner plate of the mastoid. The petrous bone was so softened in many places as to be easily scraped up like so much wet sand. A large, carious opening connected the middle and internal ears and the cranial cavity. An opening existed through the mastoid, just in front of the lateral sinus.

There was a general injection of the entire brain tissue, especially in the tempero-sphenoidal lobe. The left side of the brain was much flattened, and the resulting space filled up with pus.

Pus deposits were also found in the first frontal fissure, in the first frontal convolution, in the fissure of Rolando, in the middle lobe on the right side, and in both lateral ventricles.

There were enormous pus deposits in the region of the medulla and pons.

The cerebellum was much softened by purulent infiltration, and pus was found in its interior.

The patient's mental functions were practically unimpaired up to the time of her death.

Case 2.—Treated by Frank Allport, of Minneapolis, Minn. N. N., male, age twenty-three. Right ear. Acute purulent inflammation of the middle ear.

Was brought to the City Hospital September 16,

1889. Dr. Chase requested me to see him. There was pain in the ear and side of the head. Tenderness over the mastoid, but no swelling. Clouded intelligence. Pulse 64; temperature $103\frac{3}{5}$. Calomel and morphia were administered, and the ear frequently douched with hot water.

Sept. 17. The mastoid cells were opened, but no pus was found. The cells, however, were much softened and broken down, and a probe could be passed through the inner plate of the mastoid into the cranial cavity. This was enlarged, but no pus was found.

It was determined to trephine the skull at another point, as it was evident that pus existed somewhere in the cranial cavity, owing to the profound cerebral symptoms, the carious opening through the inner mastoid plate, and the lack of pus in the mastoid cells. The directions of Barr were followed, and the opening made through the squamous portion of the temporal bone, just above the auricle. No pus was found. Another was then made back of the auricle, and involving both the mastoid and occipital bone. A small amount of pus was here found. The wounds were irrigated and dressed antiseptically. He died that evening. His pulse was always slow, and his temperature never extended above $103\frac{3}{5}°$, and the morning of the operation it was subnormal. No evidence of any paralysis was observed in the case.

Autopsy.—This was made by Prof. W. A. Jones, Dr. Chase and myself. The dura-mater was adherent. There was a blood clot in the longitudinal sinus, and over the Sylvian fissure. Clotted blood extended over the parietal lobe backward to the occipital lobe. A large blood clot envelopes the temporal and sphenoidal lobes. A clot is found in the superior petrosal sinus, and in the right ventricle.

The right hemisphere is deeply congested; the left hemisphere slightly congested.

The medulla was bathed in pus. Abscess, and purulent meningitis of cerebellum.

There are carious openings through the petrous portion of the temporal bone connecting the cranial cavity with the middle and internal ears. A carious opening is found extending through the internal mastoid plate.

Case 3.—Treated by Frank Allport, of Minneapolis, Minn. F. J., male, age twenty-two. City Hospital case. Last June he had a fever, followed by an abscess of the right middle ear.

He came to my clinic at the University Dispensary, October 2, 1888, with a large mastoid swelling. This was opened and pus evacuated. I found a spontaneous opening through the external mastoid plate, which was enlarged. Pus was located in the cells. His pulse and temperature was somewhat heightened.

He went on to an uninterrupted recovery. January 25 he returned to the hospital with typhoid fever, and was treated by Prof. Dunn, the city physician. He died.

Autopsy by Prof. Jones;Prof. Dunn and myself. We found a venous congestion of the meninges. A thrombus was found in the posterior portion of the longitudinal sinus. Another thrombus was found in the lateral sinus. The dura-mater over the internal plate of the mastoid was much thickened and bound down by adhesions. The inner plate of the mastoid was thickened, darkened, porous and hard. The walls of the mastoid cells were hypertrophied. The cells were few in number.

The opening made in external plate was refilled with bony cicatricial tissue. The abdominal examination showed death by typhoid fever.

Case 4.—Treated by Frank Allport, of Minneapolis, Minn. J. M., male, age thirty-four. I was called to see him April 30, 1889, by Drs. Sweetzer and Hall.

I found him with a discharge from the right ear, with an accompanying acute inflammation. He has had chronic otorrhœa for a long time. He had pyæmic abscesses in various parts of his body. Temperature from 102 to 105; pulse averages about 140°. Is having chills. Has no paralytic symptoms. Has great pain in his head, but this disappeared several days before death. Mentality good, but is very nervous and excitable. Became unconscious just before death, but not before. He had no mastoid symptoms. He died May 2.

Autopsy by Drs. Sweetzer, Hall and myself. The mastoid was unaffected. The middle ear was carious, and the ossicles had all disappeared. There was no carious connection between the mastoid, middle or internal ears, and the cranial cavity. We found a thrombus in the superior petrosal sinus, pus in the superior petrosal and lateral sinuses, necrosis in the lateral sinus and general meningitis

Case 5.—Treated by Frank Allport, of Minneapolis, Minn. J. F., male, age twenty-five. Was struck in the right ear while boxing. Came to the City Hospital Nov. 29. An examination of the ear, at the request of Dr. Dunn, disclosed some inspissated cerumen, which was removed. The drum-head was much inflamed and swollen. Hearing good. Drum-head lanced and pus evacuated. The hot douche was frequently used, and the patient kept in bed. He improved.

In about one week, after considerable pain in the ear and mastoid, a swelling appeared over the mastoid, accompanied by tenderness and some pain in the temporal and parietal regions. The discharge continued.

Dec. 10. The mastoid cells were opened, and pus liberated. Improvement followed until January 11, when the pain in the right side of the head reappeared, accompanied by slight pain and swelling in the neck, extending down from the mastoid process. These neck symptoms entirely disappeared in a few days. The bowels were loose.

Jan. 15. The mastoid opening was enlarged and improvement followed.

Jan. 29. Pain in the right side of the head again. Vomiting and delirium. Improvement until Feb. 10, when the pain reappeared. Delirium; coma and death.

He never had any paralytic symptoms. The temperature and pulse were never high, and the temperature was often sub-normal.

Autopsy by Prof. Hendricks Prof. Dunn and myself. There was a diffuse sub-dural abscess, most marked in the anterior parietal region anterior to the fissure of Rolando. A purulent thrombus existed in the superior longitudinal sinus. Firm adhesion existed between the arachnoid and pia-mater. There was pus on the surface of the right frontal convolution and the right temporal convolution. A small thrombus existed in the lateral sinus. There was a carious opening from the mastoid cells into the lateral sinus. The petrous bone was unaffected, with the exception of the purulent inflammation of the middle ear.

(*To be continued.*)

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SATURDAY, OCTOBER 15, 1892.

THE PRESENT STATUS OF THE TREATMENT OF CONGENITAL CLUB-FOOT.

Nineteen papers on club-foot, followed by an extended discussion, chiefly occupied the American Orthopedic Association at its recent meeting in New York. We will attempt to summarize these deliberations.

In congenital club-foot there is a shortening of all tissues, bony, ligamentous, muscular, tendinous, fibrous and cutaneous, on the side to which the deformity looks. In certain cases the deformity can be corrected without resort to a cutting operation; in others not. In the child with growing bones, if the foot can be continuously maintained in the corrected position for a sufficiently long time, the bony and soft parts adapt themselves to the changed position and a permanent cure may result, but in the older foot, even if the deformity can be corrected by non-operative means, a perfect and permanent result may not be anticipated unless a bone operation be made which will restore the articular surfaces to their normal outlook. The milder measures are always to be resorted to in the treatment before resorting to the more severe ones, unless the age of the patient and the severity of the deformity render the milder measures obviously useless.

The treatment is divided into two stages: 1, the corrective; and 2, the retentive. Correction of the deformity is accomplished by frequently repeated or continuous stretching, or at once by *brisement forcé*, or by a cutting operation, or by both. Retentive appliances completely immobilize, or permit of motion in the directions the opposite of the late deformity. Treatment should be commenced at the earliest possible moment. In young children the hand of the operator is the most convenient means for frequently repeated stretchings, and in some cases is sufficient for immediate forcible correction of the deformity. Various mechanical devices are also employed for stretching the foot into shape, most of them being modifications of SCARPA's shoe, and acting both as stretching and retentive appliances. A more forcible instrument is found in the THOMAS wrench, used to stretch the foot past the point of resiliency, when it can be readily retained in a simple brace. Still more forcible means are found in the devices of MORTON, BRADFORD and PHELPS, but these are used almost exclusively in connection with some cutting operation. The simpler operations are the subcutaneous divisions of the tendons, of the fasciæ and of the ligaments. When the subcutaneous division of all possible of the shortened tissues and the forcible use of the wrench fails, all the soft parts on the concave side should be divided by an open operation, and the wrench or machine again applied to stretch or crush the foot into shape. Failing in this an incision is made at the outer side of the foot, and a linear or a cuneiform osteotomy is made just posterior to the anterior articular surface of the os calcis, and if necessary also of the neck of the astragalus, and again the machine is used to forcibly correct the deformity. In a few cases it will be necessary to excise the astragalus, but this will only be required when the bone is displaced far forward and the tibia articulates with the os calcis. Treatment should be carried persistently forward until a perfect and permanent cure has been attained. The guide for perfect correction of the deformity is found in the median line of the sole. In the varus foot, the median line of the sole of the anterior portion of the foot meets the median line of the sole of the heel to form an angle; in the normal foot they meet to form a straight line. The certainty of a permanent result can only be told by a knowledge that the articular surfaces look in the normal direction, or from the results of use freed from retentive apparatus. In a word, treatment is commenced as early as possible by the employment of simpler methods and milder means, and is carried on step by step in accordance with the indications until a real cure, a restoration to normal contour and perfect function, has been attained.

A NATIONAL QUARANTINE LAW.

The series of papers which have appeared in THE JOURNAL reviewing the history of the quarantine in Congress in the first years of the republic, have a special importance at this time. We are doubtless on the eve of a renewal of the agitation in favor of a more rational and effective quarantine system for this country, and the proposition to create a national quarantine will be more earnestly advocated than at any former period. In this view the first discussion of the subject in Congress will prove interesting and profitable. The fact that there was so decided a movement in the first sessions of Congress to call upon the general government to aid in preventing the introduction and spread of contagious diseases, is in itself of importance. It proves that there was at the organization of the government a party which maintained that its powers extended to the control of the quarantine of all vessels from foreign ports or places, and "to direct at what place or station," and "for what duration and particular periods of time," such vessels should perform quarantine.

The discussions which followed the introduction of the bill to empower the President to direct quarantine are interesting, as showing that the division of opinion, as to the powers of the general government and the rights of the States, was neither sectional nor partisan. The bill was introduced by a member from Maryland, and one of the most effective arguments in its favor was made by a member from South Carolina. He pertinently said, "Consider how epidemical diseases, imported, affect the United States at large; they do not merely affect the city where first imported, but they obstruct the commerce of all others." "It had been said that this subject could be better considered in each individual State than we could possibly settle it. Who are we? Are we a foreign government?" "If the subject was vested in the general government it was their business to protect the health of their fellow citizens as much as their property; because if the performance of quarantine was neglected such neglect naturally tended to affect the lives as well as the revenues and commerce of the citizens throughout the United States. He, therefore, thought it a subject perfectly within the Federal jurisdiction." The most strenuous opposition to the bill came from a member from Massachusetts, who vigorously maintained the "State rights" doctrine. It is not a little surprising, considering the intense feeling that at this early period existed against Federal encroachments upon State powers and rights, that on the final vote one-third of the members were recorded in favor of a national quarantine.

The frequent outbreaks of yellow fever in succeeding years, owing to our active commerce with the West Indies. occasionally renewed the agitation of quarantine in Congress. The most notable incident in this agitation was the report of Dr. Samuel L. Mitchell, a member from New York City, in 1803. This report we have printed at length as, perhaps, the most remarkable contribution to the subject of the prevention of the spread of contagious diseases by ships, ever put on record. Dr. Mitchell was a man of vast erudition, of an inquisitive mind and of a controversial habit. He embraced in the range of his studies all of the natural sciences, but chemistry was his favorite field of inquiry. In investigating the origin of contagious diseases he came to attach great importance to the ferments, and from them evolved the septic agent which caused various diseases. This was his *septon*. In these speculations he was treading upon grounds made familiar to us, in these latter days, by Lister and others. The great remedy for the septon of Mitchell was potash in the form of soap or lye. Cleanliness by means of these agents was, in his opinion, a sure preventive against contagious and infectious diseases His comparison of an inhabited ship to an inhabited house is very happy, and his insistences that the former can and should be made and kept as clean as the latter, and by the same means, viz., scrubbing with soap and lye, is a lesson in ship sanitation which, if practically enforced, would, as he alleges, reduce the regulation quarantine time from forty days to forty hours.

Though the question of a national quarantine was scarcely revived in Congress until within the last few years, yet it is now likely to become one of the "burning questions" of the next session.

JACQUES INAUDI, A MODERN PRODIGY.

A shepherd lad, bearing the above name, has occupied a liberal share of the scientific attention of Paris during the past few months. He has been under investigation by the French Academy, by the Sorboune and at the Salpêtrière, the verdict being that he is one of the first calculators of the century. Alfred Binet, in *Revue des Deux Mondes*, gives an interesting summary of examinations made by himself and Dr. Charcot. Although spoken of as "the Piedmontese shepherd lad" Inaudi is now twenty-four years of age. He is short and stout and has a large cranium. The young man is intelligent, converses with spirit, plays games with skill, and is much more than a mere calculating machine. A protracted anthropometric examination by Charcot shows a few insignificant signs of degeneration.

Inaudi did not learn to read and write until he was twenty years old. Yet when only twelve he was a prodigy in calculating. He began to combine numbers as early as when he was six years old; while watching his sheep he worked out arithmetical problems by methods original to himself. In addition, he will add seven numbers of eight or ten figures each, beginning at the left. In subtraction, he deals readily with numbers containing twenty figures; here, also, he begins at the left. He can multiply two numbers composed of eight figures; or give the total number of seconds in any given number of years, months, days, and hours. He was, on one occasion, asked the number of seconds in 18 years, 7 months, 21 days, and 3 hours. The answer was ready in thirteen seconds. He obtains the sixth or seventh root of large numbers with astonishing rapidity. Although he has learned the ordinary methods of calculation, he is said not to use them.

CHARCOT caused him to perform, at the Salpêtrière, two equally difficult problems in division, one upon paper according to the usual method, the other in his head, after his own process; the former required thrice as long to perform as the latter. He can repeat a number containing thirty figures, orally given him, and retain it clearly in his memory for some time. On one occasion, he remembered a number containing 22 figures for a week, although he had no warning that he would be asked for it again. His memory is not remarkable in any other direction than in that for numbers. The playing of chess blindfold is to him a complete enigma. His memory for melody, form, place and color is rather inferior to the average.

Of the mental attitude of INAUDI toward his remarkable powers, it is interesting to note that audition and not vision, is the channel of his work. This is contrary to the experience of COLBURN, MONDEUX, and all former prodigies in numbers, who have been able to explain their methods. Visualization has been the rule in all other cases. The committee of the Acadèmie des Sciences, in their report, say "he calculates with greater ease when the problem is put to him by word of mouth than when placed before him in writing; the sight of figures embarrasses him, and reverting to the procedure natural to him, he repeats to himself, either aloud or in a low voice, the numbers that he wishes to remember."

BINET's inquiry concerning any influence of heredity in the production of INAUDI's remarkable gift returned to him unsatisfied. The young man's parentage was lowly, and his ancestors were not known to have had any marked peculiarities. No other relative has manifested any calculating ability; his brothers tried to learn from him, but without success. He had not had any derangement of health as a youth, and his growth was in every way like that of his fellow peasant lads. He was simply seized with a passion for reckoning, or for the exercise of his memorizing faculty. The Academic investigators acknowledged a negative result in the heredity branch of their inquiry.

The case of this young man seems to establish the perfectibility of human faculties many times beyond the normal, and as BINET says "this fact is especially important to us because it allows us to see the high degree of elevation the mind of man may yet attain."

THE MISSION HOSPITAL AT CANTON.

This institution was opened in 1839 by DR. PETER PARKER. It is now conducted by DR. J. G. KERR. assisted by DR. J. M. SWAN and MISS NILES, M.D. During 1891, the number of patients received was 1,269, while there were treated in the out patient department not less than 22,000 cases. There were 2,140 surgical operations performed. The wards are roomy and improvements are added yearly. About thirty natives have been trained in four year courses. Some of these continue at Canton and assist at the Canton Hospital or at the three dispensaries conducted by DR. MARY FULTON, at which several thousand women and children have received treatment. Others of the graduates have gone back to their former homes into the interior and even to the borders of riotous Hunan. Nearly all the high officials of Canton have from time to time had occasion to seek the advice of our American medical missionaries, and the latter have had large measure of success. On one occasion, not long ago, DR. KERR was invited to attend the Tartar General who was the military commandant of the city and district. After his recovery this official came with a large retinue to express his grateful appreciation to the physician. The pomp and circumstance of this visit was the means of producing a profound impression among the people—deeper perhaps than would have been made by successful services on a hundred persons of minor rank. The influence of the Hospital is extended to the island of Nodoa, DR. H. M. MCCANDLISS and an assistant, there being a small pioneer hospital at the town of Nodoa.

ELEVENTH INTERNATIONAL CONGRESS.

As a recent notice in this JOURNAL has informed our readers, the Eleventh International Congress will meet in Rome, Italy, from September 24 to October 1, 1893. By an official letter dated August 22, 1892, and signed by Prof. Guido Baccelli, President, and Prof. E. Maragliano, Secretary General, Dr. A. Jacobi, of New York, has been directed to form an American Subcommittee. Its membership is not yet complete, but on it are already found beside that of the Chairman, the names of Drs. Wm. Osler of Baltimore, S. C. Busey of Washington, N. S. Davis of Chicago, Charles A. L. Reed of Cincinnati, Wm. Pepper of Philadelphia, F. Peyre Porcher of Charleston, James Stewart of Montreal, and Alexander J. C. Skene of Brooklyn, N. Y. In the interest of facilitating the trip to Italy, and reducing the expense, arrangements will be made with the Steamship Companies. According to a communication from the Central Committee—contained in a letter of the Secretary General's dated September 14, the North German Lloyd proposes to reduce the fare to Genoa by twenty per cent., and that of the return trip by ten per cent. It is expected that still more favorable terms will be secured.

UNIVERSITY OF MONTREAL.—The chair of pathology in this institution has been offered to Dr. Adami, fellow of Jesus College, Cambridge University, and formerly of Owens College, Manchester. The University has a pathological laboratory ready for students and practitioners wishing to do special work in bacteriology and morbid anatomy.

THE ENGLISH DISEASE.—The natives of Damascus are said to have been obliged to find a new name for drunkenness, and inasmuch as a large proportion of its victims are foreigners or tourists, they have called it "the English disease."

A NEW ABORTIFACIENT.—At a recent coroner's inquest at Leicester, England, testimony was adduced to show that the deceased, a woman, had been in the habit of purchasing diachylon in the lump and eating it to produce abortion. The experiment was generally successful in her case, it was alleged, but she tried it once too often, and died from an overdose of lead.

DOMESTIC CORRESPONDENCE.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

Please give publicity through your JOURNAL to a confidence game that is being worked on physicians in this State and probably in others. A "special agent" sailing under the name of F. C. Washburn, of St. Paul, Minn., goes from city to city appointing medical examiners for the Bankers' Mutual Aid Association of St. Paul, Minn. The examiner is naturally requested to take a policy for which he pays $5.00 quarterly dues in advance. No policy ever appears and the appointment is bogus. Yours very truly,

F. LOHRSTORFER, M.D.

Port Huron, Mich., Oct. 8, 1892.

NECROLOGY.

MR. WILLIAM D. HUSBAND, M.R.C.S., a former president of the British Medical Association, died at York, July 18, in his 76th year. He was for many years the treasurer of that Association, and seldom failed in a half century of membership to attend the meetings. He was the leading surgeon of the West Riding of Yorkshire, and was senior attendant to the County Hospital and the Retreat. He was Lord Mayor and Justice of the city. He had been lecturer on clinical surgery in the York School of Medicine.

DR. JOHN H. DOUGLAS, formerly of New York City, died in Washington, D. C., October 2, aged 68 years. He was a native of Waterford, N. Y., and graduated at the University of Pennsylvania in 1847. He was a resident of New York, during the greater part of his professional life, engaged in a specialty of diseases of the throat and lungs. He was General Grant's physician during the last painful illness of that eminent American. Dr. Douglas was unremitting in his services, and found it expedient, after the death of the General, to go to Mexico on a recruiting excursion. He went to Cuba and Florida also, but he seems not to have been benefited by the southern climatic influences. His health was still further broken about two years ago by a cerebral hæmorrhage, and a second stroke was experienced by him in Washington, about a fortnight ago. An unpleasant discrepancy, some of the discussion of which was worked over in the newspapers, arose between the survivors of the General and Dr. Douglas regarding the latter's fees. This was arranged, if not placated, by the payment of about $12,000 for services covering the greater part of ten months. Some of these services were exclusive, the class of all others concerning which there is the greatest room for disagreements and subsequent litigation. The last four years of Dr. Douglas' life were spent in retirement, chiefly in the vicinity of New York and in Washington. Without doubt under some forms of Government, having more of gratitude than Republics, Dr. Douglas would have been, in his latter days, in the receipt of a comfortable pension.

MISCELLANY.

WE hear the S. S. S. man of Atlanta has gone on a visit to Hot Springs, Arkansas, for his "rheumatism."—*Atlanta Med. Journal.*

The Chicago Clinical Review is the latest candidate for professional favor. Drs. Cleveland and Bouffleur are the editors.

MEETING OF INTERNATIONAL MEDICAL CONGRESS (American Public Health Association), in the City of Mexico, November 29th and 30th and December 1st and 2nd, 1892. For the convenience of delegates, and all physicians with their families, who desire to attend this meeting, an elegant Pullman car will leave Chicago November 19th. Short stops will be made at all points of interest between Chicago and the City of Mexico. For further information, maps, time tables, etc., address John E. Ennis, D. P. A., Mo. Pac. Ry., 199 Clark street, Chicago, Ill.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from October 1, 1892, to October 7, 1892.

Major Alfred A. Woodhull, Surgeon U. S. A., leave of absence granted is extended ten days.

Capt. Junius L. Powell, Asst. Surgeon U. S. A., is relieved from duty at Ft. Randall, S. Dak., to take effect upon the final abandonment of that post, and will then repair to Ft. Monroe, Va., and report in person to the commanding officer of that post for duty.

Major Robert M. O'Reilly, Surgeon U. S. A., will be relieved from duty at Ft. Logan, Col., and will report for duty as Attending Surgeon in this city on December 15, 1892.

Lieut.-Col. Francis L. Town, Deputy Surgeon-General U. S. A., is relieved from duty at the Presidio of San Francisco, Cal., and will report in person to the commanding officer, Ft. Porter, N. Y., for duty at that station.

Capt. Alonzo R. Chapin, Asst. Surgeon U. S. A., is relieved from duty at Ft. Yates, N. Dak., and will report in person to the commanding officer, Ft. Hancock, Tex., for duty at that station.

Capt. Eugene L. Swift, Asst. Surgeon U. S. A., is relieved from duty at Ft. Grant, Ariz., and will report in person to the commanding officer, Ft. Yates, N. Dak., for duty at that station.

Major Egon A. Koerper, Surgeon U. S. A., is relieved from duty at Ft. Walla Walla, Wash., and will report in person to the commanding officer, Willet's Point, N. Y., for duty at that station, relieving Major Clarence Ewen, Surgeon. Major Ewen, on being relieved by Major Koerper, will report in person to the commanding officer, Ft. Walla Walla, Wash., for duty at that station.

Major Robert H. White, Surgeon U. S. A., granted leave of absence for two months, to take effect during October, 1892.

Capt. Edgar A. Mearns, Asst. Surgeon U. S. A., is relieved from further duty with the commission appointed for the location and marking of the boundary between Mexico and the United States, and will without delay proceed from El Paso, Tex., to Ft. Clark, Tex., and report in person for duty to the commanding officer of that post.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending October 1, 1892.

P. A. Surgeon Eugene P. Stone, detached from the "Pinta," and granted two months' leave.

P. A. Surgeon Louis W. Atlee, detached from the "Independence," and ordered to the "Pinta."

P. A. Surgeon F. N. Ogden, detached from duty in connection with Inter-Continental Railway Commission, and to the "Independence."

Surgeon William Martin, detached from the "Thetis."

P. A. Surgeon Chas. N. Rush, detached from the Navy Yard, New York, and granted six months' sick leave.

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ORIGINAL ARTICLES.

REPORT OF CASE OF PAPILLOMA OF THE LARYNX—INTUBATION TUBE WORN *FOUR YEARS.*

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, heald at Detroit, Mich., June, 1892.

BY F. E. WAXHAM, M.D.,

PROF. OF LARYNGOLOGY, RHINOLOGY AND DISEASES OF CHILDREN, COLLEGE OF PHYSICIANS AND SURGEONS OF CHICAGO.

Papillomata of the larynx, while classified among the non-malignant growths, are nevertheless of the gravest import when occurring in early life and especially in very young children.

The case coming under my observation is unique on account of the complications, the length of time the laryngeal tube has been worn, and the almost perfect comfort of the patient. The child has worn the tube since he was two and a half years old and is well developed, strong and healthy and does not complain of pain or irritation of the larynx as the result of its presence. Indeed much less discomfort is experienced than results from the presence of a tracheotomy tube.

June 17, 1888, I was called through the courtesy of Dr. J. S. Mitchel to see Arthur D., age two and one half years. His breathing was labored, the voice whispering, and the dyspnœa so great that the loud stridor was heard all over the room. Notwithstanding the difficulty of breathing he was busy and playful. The following history was obtained: His voice and cry were natural until an attack of measles which occurred at the age of one and a half years. During the attack of measles he coughed croupy and breathed with some difficulty but these symptoms disappeared. The voice had been husky for eight months and entirely suppressed for two months. The respiration had been more or less embarrassed for two months. The dyspnœa gradually increased. For three days the child had been breathing with great difficulty. The patient had been seen by a number of physicians, including the late Dr. H. A. Johnson, all of whom pronounced the case one of laryngeal obstruction due to papilloma!

As the color of the patient seemed good and as he was playing about it was thought safe to postpone operative measures for a few hours and to watch the case. Later in the day we were again called and found a decided change for the worse. The little fellow had become prostrated by the difficulty of breathing, the pulse had become rapid and feeble, and he was slowly dying from suffocation. It was decided to perform intubation with the hope that the introduction of the tube and subsequent pressure might destroy the growth. The operation was quickly and easily done, giving immediate relief and the patient passed into a quiet refreshing sleep. The next morning he was found riding his velocipede about the house and suffering no inconvenience from the tube. The tube was worn for six days without the least annoyance.

On the sixth day the tube was removed. The respiration was quite difficult for a few hours following its extraction. The dyspnœa, however, soon subsided and the respiration remained about as it was during the weeks preceding the urgent symptoms that led to the operation. The voice still remained suppressed and the respiration somewhat embarrassed for two weeks but not sufficiently so as to call for interference.

July 9. The urgent dyspnœa returned and it became necessary to re-introduce the tube which again gave immediate relief.

July 12. Removed the tube but the patient could not live without it. It was apparent that the simple pressure of the tube was not sufficient to destroy the growth. The upper and anterior portion of the tube was discolored showing the location of the greatest pressure. This portion of the tube was coated with collodion, this in turn with chromic acid and then another coating of collodion and the tube introduced, the idea being to destroy the growth by cauterization, as on account of the early age of the patient a laryngeal examination was impossible and the removal of the growth by the intralaryngeal method not practical. As laryngotomy at so early an age was extremely hazardous and in the great majority of cases very unsatisfactory, cauterization in this manner seemed worthy of a trial.

July 15. The tube was again removed and as the dyspnœa was great another application of chromic acid was made. On account of a previously arranged trip to Europe the case was placed in the hands of another physician. The tube was left in position for ten days when on account of some difficulty in removing it tracheotomy was performed. About this time the child contracted whooping cough which with a very severe diarrhœa, which possibly resulted from the constitutional effect of the chromic acid, greatly prostrated him. Under very skilful treatment, however, the patient soon rallied and was about the house again.

Oct. 1. Upon my return from Europe the patient was found in a very good condition but wearing a tracheotomy tube instead of the intubation tube.

Oct. 8. Gave the patient chloroform and made an examination of the larynx with the finger and laryngeal sound. The larynx was entirely closed on account of adhesions that had formed as the result of cauterization. The smallest laryngeal sound could not be passed and no air could be drawn through it when the tracheotomy canula was closed with the finger.

Oct. 14. With the assistance of Drs. Ingals and Jaggard of Chicago, Dr. Guibar, of Kansas, and Dr. King of Iowa, chloroform was given and laryngotomy performed. The adhesions were broken up and cut away as far as possible and portions of the papilloma still remaining removed and the surface thoroughly cauterized with nitrate of silver. The cartilages of the larynx were united with silver wire sutures, the wound dressed antiseptically and the tracheotomy tube left in position.

Oct. 21. Gave the patient chloroform and examined the larynx carefully. It was found nearly closed again. Only a very small laryngeal sound could be passed. This was introduced and the adhesions broken up as far as possible and the smallest size intubation tube introduced, which was left in position above the tracheotomy tube.

Oct. 28. The intubation tube removed and also the silver wire sutures.

Nov. 4. The wound entirely healed. The intubation tube was reintroduced, the patient wearing both the tracheotomy and intubation tubes with comfort, being able to eat and even to drink liquids in the upright position without difficulty.

Nov. 11. Removed the intubation tube and introduced a larger one.

Nov. 18. Removed the intubation tube and introduced a still larger one, shortened so as to be worn above the tracheotomy tube. Strangely enough the patient could not breathe through the intubation tube excepting with great difficulty and the tracheotomy tube was still worn.

Dec. 2. With the assistance of Dr. Ingals chloroform was again given and a careful examination of the larynx made. The papilloma seemed to be reappearing about the base of the epiglottis which upon inspiration was drawn down over the opening of the tube, thus preventing respiration through it.

Dec. 8. With the assistance of Dr. Hawk, of Iowa, chloroform was administered and the growth at the upper portion of the larynx removed with a curette. A tracheotomy tube with an opening in the outer canula was also introduced.

Dec. 11. He was able to breathe quite comfortably through the intubation tube with a cork in the tracheotomy tube.

It is unnecessary to detail the further history of the case. There has been a constant tendency to recurrence of granulation tissue above the head of the intubation tube requiring frequent operations. The intubation tube was changed on an average of once a month, its diameter being gradually increased. The tracheotomy tube was removed and cleansed daily by the attendants. After wearing both intubation and tracheotomy tubes for two years the latter was dispensed with and the intubation tube increased both in length and diameter. For the last two years the intubation tube alone has been worn. The patient at times wearing it as long as two months without changing. The head of the tube is occasionally altered in shape in order to prevent too long continued pressure upon one point. The patient is now able to do without his tube a few hours at a time. The boy is now six and a half years old and as strong and rugged as any boy of his age. We are hopeful that as he reaches puberty and as the larynx increases in size at this age there will be sufficient room for normal repiration notwithstanding the amount of cicatricial tissue present.

240 Wabash Avenue.

Discussion.

Dr. Wigler called attention to the late paper of Dr. Hooper, of Boston, in which he described endo-laryngeal operations under chloroform in children. He also referred to an instrument lately devised by Dionisio, an endo-laryngeal speculum which holds the glottis open in the living subject.

Dr. Thrasher said that he was much interested in the paper of Dr. Waxham. About a year ago a 6 year old boy was brought to him suffering from dyspnœa. Examination revealed the chink of glottis blocked by a red granular mass, apparently papillomata. After a preliminary tracheotomy the larynx was pretty well cleared by the cutting forceps and when the respiration per *vias naturales* was restored (in about 3 weeks) the patient went home. In about 2 months he returned with an increased growth of the neoplasm. These were removed under cocaine at one sitting and the patient was not seen again for a month when the operation was again repeated. The recurring growths were removed at intervals of 4 to 8 weeks until January 1, of this year. At that time the dyspnœa was not sufficiently relieved by the attempted removal of the warty tissue and a small intubation tube was inserted to permit of the child's returning home. This tube was worn about a month and brought back in the hand of the patient, having been coughed out. Dr. T. then re-inserted a larger tube and the patient has worn a tube ever since. Some 3 weeks ago Dr. T. learned that the little fellow had taken whooping cough but was getting along as well as could be expected. There was a marked atrophy of the sessile growths, apparently from the pressure of the tube, after the tube had been worn for only a month, and this atrophy gradually continued up to the time of the invasion of the whooping cough, since when the patient has not been seen.

Dr. Von Klein remarked that he had been called in the night to see a case of dyspnœa from papillomatous obstruction. He attempted to introduce an intubation tube, failed, tried a smaller and found that there was not room to pass the smallest size tube. He then advised tracheotomy but parents objected and soon the child died of CO_2 poisoning.

Hæmorrhoids rapidly diminish in size, become free from secretion and pain, and generally improve, according to Dr. James, if powdered daily with pure calomel.

SPONTANEOUS CURE OF MULTIPLE PAPILLOMATA OF THE LARYNX AFTER TRACHEOTOMY.

SAME CASE ALSO DEVELOPED THE RARE ANOMALY OF PAPILLOMA OF THE EPIGLOTTIS.

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY JOSEPH A. WHITE, A.M., M.D.,
SENIOR SURGEON TO THE RICHMOND, VA., EYE, EAR, THROAT AND NOSE INFIRMARY.

Frank Bigby, aged 5 years, was brought to me on June 11, 1886, suffering with dysphonia and severe attacks of dyspnœa. I had no difficulty in making a laryngoscopic examination, and found his trouble was due to the presence of several small growths of the larynx, located especially on the left cord and ventricular band near the commissure, and also at the inter-arytenoid space. After two or three sittings to accustom the larynx to the contact of the forceps, I succeeded in removing the obstructions and cauterizing their seats with chromic acid. In October he was brought back because of the return of dyspnœa, and I found the growths had not only recurred, but also had extended to the right side. I also noticed a small protuberance on the lower face of the epiglottis on the right side as if a similar neoplasm were developing there. October 10, I operated with the forceps, removing most of the growths. November 14, he came back with a more decided recurrence, a regular cauliflower mass, and with the protuberance on the epiglottis developed into a small pediculated tumor. I again removed all the growths, and fearing they might be malignant, I sent one specimen to Dr. Wm. M. Gray, the pathologist of the Army Medical Museum in Washington, and another to Dr. Geo. Lefferts, of New York. The former replied that the growth was a hard papilloma, composed of squamous epithelial cells, and histeoid in character. Dr. Lefferts answered November 16, 1886, that the growth was a papilloma, and that there was no reason why it should not be radically extirpated, although he did not think this could be done per *vias naturales* in a child only 5 years of age, and suggested thyrotomy as the best means to that end. He added, "I have never seen, heard or read of a papilloma of the epiglottis".

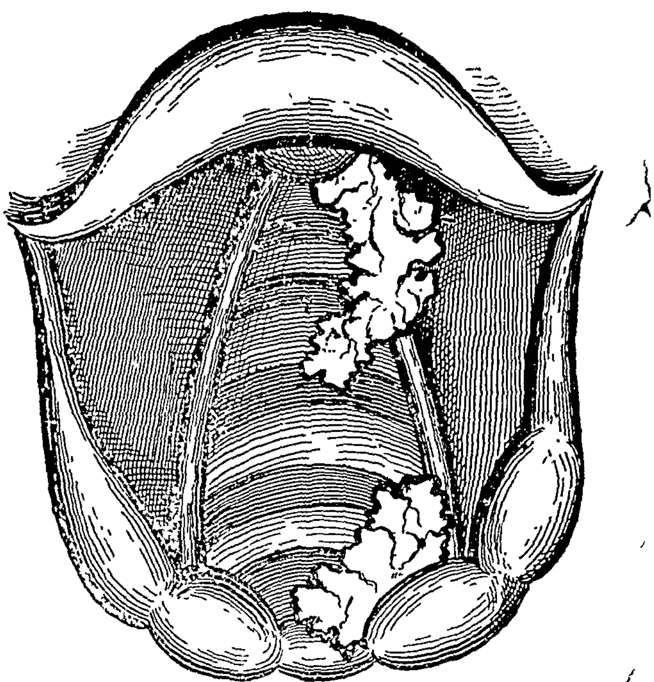

Fig. 1.—In June, 1886.

My reply to this, was to send him the growth that had been removed from the epiglottis and preserved in a solution of chloral.

He wrote me again January, 1887, stating that the gross appearance of the little tumor sent him certainly resembled papilloma, but that his eyes then debarred him from the use of the microscope. On January 11, 1887, the case again returned with oppressive breathing, and the larynx refilled with a cauliflower excrescence. Removal per *vias naturales* was followed by relief. This time I could not remove all the growth, and on January 23, at 12:30 A.M., I was summoned to go to the boy a mile in the country. On my arrival, I found the resident physician of the Confederate Soldier's Home, Dr. Franklin, endeavoring to resuscitate an apparently dead body. There was no perceptible respiration, the pulse could not be detected at the wrist and the only evidence of life was a feeble heart beat.

I opened the trachea by the inferior method of tracheotomy as rapidly as possible. When the air was admitted there was no inspiration and no cough from irritation of the trachea. Artificial respiration was commenced and kept up continuously about three hours. Any cessation of it was followed by disappearance of the apparently restored respiratory action. The trachea was opened at one o'clock, and consciousness returned about 8 o'clock A.M. The boy recovered rapidly from the effects of the asphyxia and the operation, and two weeks later came to my office. I removed the growths again, and repeated the operation several times in the next six weeks. Each operation seemed to be followed by rapid repullation of the growths, and in March they projected above the level of the cartilages of the larynx preventing the epiglottis from closing the latter. They also extended sub-glottically down to and out of the tracheal opening when the tube was removed to be cleansed. I several times passed a wire loop through the external opening in a small rubber tubing up and out through the mouth, cutting off pieces of the growth from the sub-glottic region. I have also seized them, and drawn them out through the opening in the neck. These operations were repeated from time to time until I filled a half ounce bottle with the tissue. Microscopic examination months after showed the character of the tumors to be unchanged.

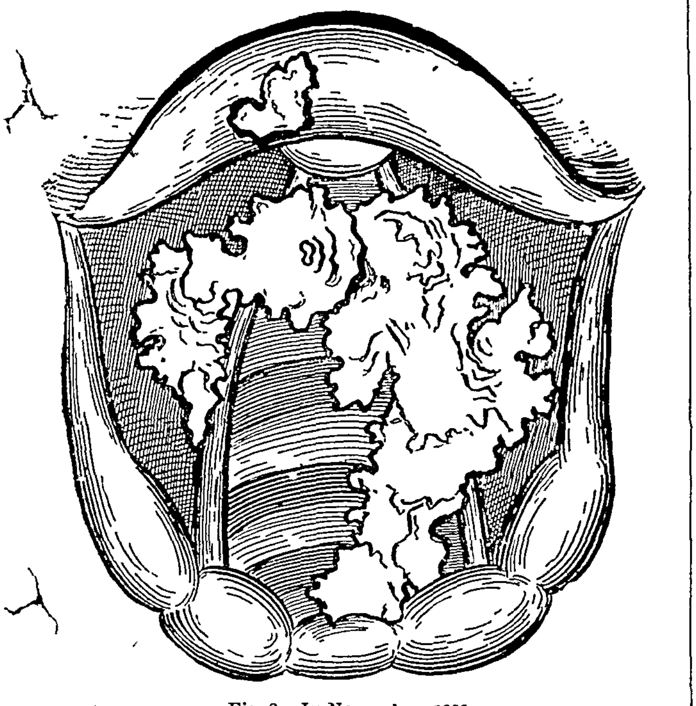

Fig. 2.—In November, 1886.

At last I became disgusted with my results. I recognized that the more I meddled with the case the more abundant became the pathological formations. Several times I was about to adopt Dr. Leffert's suggestion to perform thyrotomy, but I was averse to doing this, as the voice invariably suffers, and I was not satisfied it would prevent a recurrence.

During the summer of 1889 I was absent a great deal. The boy came to my office and missed me several times, so that two or three months passed without my seeing him. When I did so, I noticed the mass had diminished in size. So I concluded to let him alone as far as instrumental interference was concerned. He came to see me now and then. I did nothing but look at his larynx and use a simple astringent spray. Under this "do nothing treatment" he generally improved, the mass constantly diminishing until the larynx began to assume something of a normal aspect.

The growth on the under side of the epiglottis also diminished *pari passu* with the laryngeal neoplasms. In April, 1892, I exhibited the case to the Richmond Academy of Medicine and Surgery, several members of which who give some attention to laryngology examined him. His condition then, as now, was an almost perfectly normal larynx, with white pearly cords, a small projection on the epiglottis at the seat of the former papilloma, and a larger remnant of the growths on the anterior wall of the trachea just below the commissure. He still wears the tube on account of the latter abnormality. I am afraid to remove it until this disappears. But instead of a full tube, he wears only a piece of a hard rubber tracheal canula, cut off just long enough to keep the opening in the neck patent. At night he wears the inner tube—in the daytime he removes this and keeps the outer tube closed with a cork; and when thus corked up he can breathe well and speak distinctly, the voice being strong and natural. To hear him speak one would not know he had a tube in the neck.

This case is especially interesting for several reasons:

1. It is, as far as I can discover, the first case on record of papilloma of the epiglottis, for although Uchermann reported a similar case to the Christiania Medical Society in 1889,[1] the date of my correspondence with Dr. Lefferts antedates this report fully two years. In his case the growth originated from the epiglottis and vocal cords in a child 7 years of age, who had been aphonic four years. He extirpated it entirely in six sittings, and had a perfect result with no recurrence.

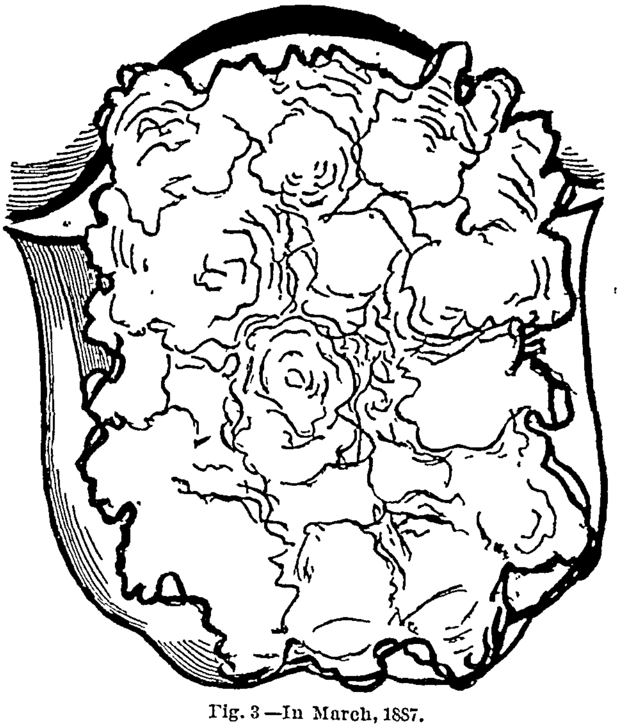

Fig. 3—In March, 1887.

Eliasberg in 1889 also reported one of secondary papilloma of the epiglottis in his case of recurring papillomata of the larynx in the case reported below. Dr. Louis A. Bull, of Buffalo, N. Y. (*Jour. of Ophthal., Otol. and Laryng.*, July, 1889), records a case of what he calls papilloma of the epiglottis and base of the tongue, but it appears to to have been an overlapping of the lingual tonsil.

2. It is the sixth case in literature of spontaneous cure of recurring multiple papillomata of the larynx after tracheotomy, the other five being two cases by Prof. Oertel, quoted by Hoppmann (*Volkmann's Sammlung. Klin. Vorträge*, No. 315); one by G. Hun-

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[1] See report of the Christiania Med. Soc., Medicinsk Leistabs Forhandlinger, 1889.

ter Mackenzie (*Lancet*, April 6, 1889); one by Eliasberg (*Meditzinskoia Obozrenie*, 1889, No. 1, p. 46); and one by Garel (*Annales des Maladies de l'oreille et du larynx*, June, 1891). In Mackenzie's case the boy was 5 years old, and wore the tube one year after the operation, which was done in 1883. Eliasberg's case was a boy 10 years of age. Thyrotomy was performed in 1887, a mass of polypoid growths removed and cauterized with Paquelin's cautery. In February, 1888, there was a recurrence. In April following thyrotomy was again performed. In June there was a second recurrence, occupying vocal cords and epiglottis. In June, 1888, alarming asphyxia necessitated tracheotomy, and a month later the neoplasm filled the larynx. Two months later this began to improve, and in December nearly all the growths had disappeared.

The canula was worn until March, 1890, when it was removed, as it caused irritation with bleeding granulations about the wound, and cough. The voice became very harsh because of the thyrotomies previously performed.

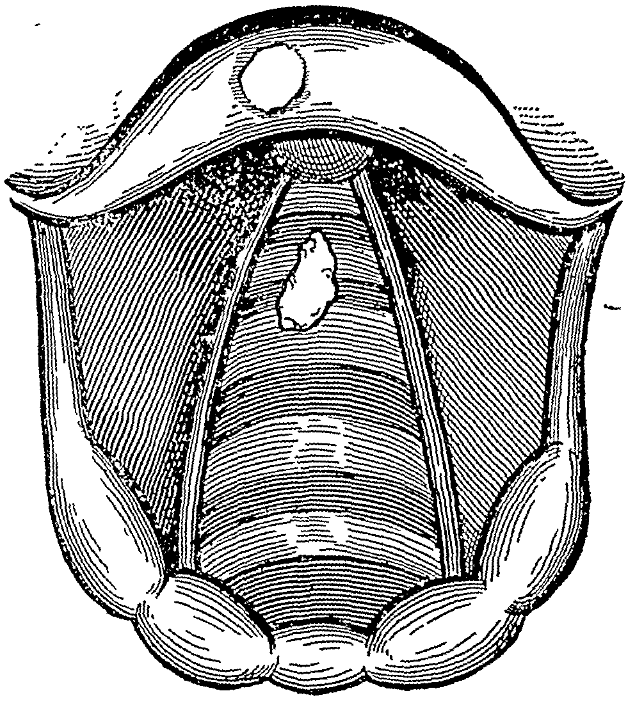

Fig. 4.—Status Præsens.

Garel's case was a girl of 4 years who was tracheotomized after an attack of suffocation June 11, 1890. The presence of papilloma in the larynx was demonstrated by laryngoscopic inspection. The tube was removed July 30, forty-nine days after the operation, all signs of the growth having disappeared.

Garel also speaks of another case in which he did tracheotomy on a boy 11 years old for presumed growth in the larynx, but as he was unable to see into the windpipe, the diagnosis was doubtful. In all of these cases there was the same result, a spontaneous disappearance of the growths, following tracheotomy, although in each one the tube was worn during a different period. Garel's case was the shortest (forty-nine days), and mine was the longest (five years). Eliasberg's case resembled mine more closely than any of the others.

There was the same tendency to repullation of the papillomata after each attempt at their removal, the same enormous development of the growths almost immediately following the tracheotomy, and the same gradual shrinkage of them when all operative interference ceased.

3. It shows that the tracheal canula can be worn indefinitely without secondary paresis of the vocal cord, or impairment of the voice, and that in such cases it is best not to be in a hurry to remove it, because of the probable development of tracheal polyps after the operation. In this case they developed even after the larynx was clear of any abnormality, and he still retains the tube, because there is a small remnant on the anterior wall of the trachea.

These growths are of two kinds: 1. Vegetations existing whilst wearing the tube and retarding its removal; and 2, growths appearing after removal of the tube and healing of the wound; but the latter danger is only to be feared when we are in too great a hurry to get rid of the tube. Sometimes if their pedicle is weak they may be coughed out, otherwise a secondary tracheotomy may be necessitated by the consequent suffocative spasms, and death may result from one of these attacks before the operation can be performed. That this is no imaginary danger is shown by the fact that over twenty cases have been recorded, by Gigon (*Union Med.*, 1862), Wanscher (*These de Copenhagan*, 1877), Archambault (*France Med.*, 1879), Voight (*Jahrb. fur Kinderheilk.*, 1882), Kock (*Arch. fur Chirurg.*, *t. xv*), Waldsberg and Reedel (*Deutsh. Zeitsch fur Chirurg.*, *t. xv*), Kohl (*Tese de Zurich*, 1887), Hume (*Cleveland Med. Gaz.*, 1886), Revilloid (*Rev. Med. de la Suisse Romande*, March, 1891), and others.

The risk of a too early removal of the tube is also shown by a case recorded in one of the last numbers of The Journal of the American Medical Association, April 30, 1892, by Dr. F. G. Raynor. A girl of twelve [illegible] months was tracheotomized during an [illegible] by Dr. Sherwell, Nov. 9, 1889. On the 20th, thyrotomy was performed and the larynx thoroughly cleaned out. Two days after the tube was removed. June 5, 1890, seven months after, she died in a suffocative attack before assistance could be obtained. Had the tube been worn long enough to be sure there would be no recurrence, the result might have been more favorable.

4. The result in my case helps to show the advantage of tracheotomy over thyrotomy in recurring papillomata of the larynx. Some writers claim the latter operation to be free from danger to life and even to voice if properly done, but I doubt if statistics bear out this assertion.

A. Malthe (*Norsk Magazin for Lagevidens-Kaben*, 1886, p. 490), reports a case in a four year old boy of multiple papilloma of the larynx tracheotomized June, 1883. On August 15, thyrotomy was performed to remove the growths, and on August 20 the child died. Salzer (*Langenbech's Archives, Band 39, Heft. 2*), in his report of the laryngeal operations in Billroth's clinic from 1881 to 1889, records ten cases of thyrotomy with three deaths. These references prove it is not free from danger to life, and it is an untenable claim made by Shalita of Kiev (*Uratch*, 1889, No. 17, p. 389), that it will not affect the voice if properly done. I doubt if any of us has ever performed it without detriment to the voice.

Bornemann (*Deutsch Med. Wochen.*, 1891, No. 15), in reporting four cases of multiple papillomata in children from B. Fraenkel's clinic in Berlin, in three of which thyrotomy was done, and in one (6 years old) an endolaryngeal operation was successfully performed, claims that the latter method is preferable to the former, because of the danger to voice and life from thyrotomy. Tracheotomy has the great advantage over thyrotomy that it gives perfect rest to the larynx, by temporarily suspending its respiratory functions, thus in all probability removing some irritating factor in the redevelopment of the growths, whilst guaranteeing unimpeded respiration without risk of suffocation.

Thost ("*Ueber papillom in der oberen Luftwegen*" *Deut. Med. Woch.*, May, 1890), in a capital article on this subject, states that papillomata of the larynx in children will always disappear spontaneously if let alone, that it is benign neoplasm, and without danger. If this is correct, why should thyrotomy with its attendant risks to life and voice be performed? Is is it not better to let such cases alone, merely keeping them under observation to guard against suffocation from any sudden or unusual excessive development. It is only in these exceptional cases that tracheotomy is called for, and it will be all the surgical interference required. Malignant growths in children are rare and these proliferations of the mucosa, as papilloma are claimed to be in contradistinction to organized tumors, are comparatively free from danger. Their causation is uncertain, but any direct irritation of the laryngeal mucosa can produce them. Probably they often result from naso-pharyngeal secretions dropping into the larynx at the arytenoid space, and which not being coughed away, act as a local irritant.

Lennox Browne ("*A case illustrating the possibility of hypertrophy of the pharyngeal tonsils being an etiological factor of papillomata in children,*" *Brit. Laryng. and Rhinolog. Ass'n.*, Nov. 1890), reports a case upon which he bases an argument to show that adenoids of the naso-pharynx are a factor in their production. This is probably true, as adenoids are accompanied by considerable secretion which may drop into the larynx, and keep up a prolonged irritation of the mucosa.

CATARRH OF CHILDBEN AND THE IMPORTANCE OF EARLY TREATMENT.

Read in the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY LOUIS C. CLINE, M.D.,
OF INDIANAPOLIS, IND.
PROFESSOR OF LARYNGOLOGY AND RHINOLOGY IN THE MEDICAL COLLEGE OF INDIANA

In this paper I wish to consider briefly, nasal catarrh as met with in children, and characterized by an inflammation and purulent discharge from the nasal and naso-pharyngeal mucous membrane.

The word catarrh in the sense that it is ordinarily used, is a kind of cloak to cover up our lack of knowledge of the true inwardness of these cases.

The literature on this subject is rather confusing and unsatisfactory.

MacKenzie recognizes two forms, acute and chronic; under the acute form, he classes the gonorrhœal and leucorrhœal infection that may occur in the new born.

Frankle describes but one form, the acute. Cohen is inclined to attribute all cases of purulent discharge to remote specific infection. Lennox Browne, Sajous, Seiler, and Robinson, make no special mention of purulent discharge in children, but class it along with other cases and hypertrophied glandular structures.

Bosworth in his recent work, devotes a small chapter to purulent catarrh of children, in which he takes the ground that "it is purely local in character, and depends on no constitutional taint, and consists essentially in an increased secretion of mucus in the earlier stages, together with a rapid desquamation of the epithelial cells, which runs its course as a purulent disease in from five to ten years, developing finally into atrophic rhinitis."

In children up to the age of 12 to 15, epithelial structures are especially liable to take on diseased action; we see this manifested in the frequent hypertrophic condition of the glandular structure of the naso-pharynx; whereas in adults, the inflammation of mucous membrane results in hypertrophy of the connective tissues.

During childhood, the lymphatic system undergoes its greatest development: hence it is, that the lymph glands are more prone to alterations of nutrition than in adults.

In children there is great activity in the development of epithelial cells, and when stimulated from any cause, may lead to one of two distinct results. Ist, they may pile themselves upon each other and so adhere as to form a true epithelial hypertrophy, together with an increase of lymph tissue and lymph corpuscles, as in the case of adenoid growths and many enlarged tonsils; this form is likely to follow scarlet fever, measles or diphtheria. 2nd, the epithelial cells may fail to adhere and result in a rapid desquamation, with an increased flow of mucus, forming an abundant muco-purulent discharge.

Both these processes may go on in the same case, or desquamation from the turbinates may follow the adenoid growths in the vault.

My observation leads me to believe that children of a strumous or scrofulous diathesis are more prone to take on the second form, or exfoliation of the epithelial structures.

An acute cold of a child differs from that of an adult, in that the inflammation involves the epithelial coat and naso-pharyngeal glands, thus producing nasal-stenosis; while in the adult, the inflammation involves the mucous membrane proper, extending into the deeper structures.

These inflammatory changes commence as a rule, in children between the ages of three and five years, and if not cared for, will culminate in one of two results, or may be, a combination of both: viz., the desquamative or suppurative form, or the coalescing or adenoid form.

If the case is confined strictly to the desquamative variety, it will gradually extend into the mucous follicles and rob them of their epithelial lining and destroy their secretive power, and in this way lead to formation of crusts, and finally terminate in atrophic rhinitis, about the 14th or 15th year.

The characteristic symptom of this disease, is a muco-purulent discharge from both nostrils, usually of a cream or straw color, and can be diagnosed from the other varieties by there being no special obstruction to the nasal passage, except the accumulation and drying of the secretions. In case of a foreign body the discharge is always confined to one side. In syphilis and in cases of necrosis, the discharge is very offensive. When the discharge is due to adenoid growths, the first thing noticeable is the marked altered condition of the voice, which is not changed on removing the secretions. In these cases, large quantities of tenacious mucus are found in the naso-pharynx. In those cases in which the adenoid growths are large enough to materially obstruct the naso-pharynx, the discharge makes its way through the nose: this, with the characteristic facial expression, muffled voice, together with careful inspection with the rhinoscopic mirror, will be sufficient to make a correct diagnosis.

In a list of twenty-five carefully noted cases that have applied to me for treatment for nasal catarrh during the last year, five were suffering from a purulent discharge due to exfoliation of the epithelial coat. Three were due to foreign bodies, one to a fibrous tumor, sixteen to adenoids in the vault and enlarged tonsils,etc. Hearing was impaired in twenty-one of these cases directly in proportion to the degree of stenosis, and the length of time the difficulty had existed. Suppuration and rupture of the membrana tympani had occurred in six of these cases; three of these followed the grippe. Seven had developed after having measles, five after scarlet fever, four followed diphtheria, and five gave a history of repeated colds.

Thus we see, out of the above twenty-five cases, only five were found to be strictly catarrhal. The other twenty were complicated with and continued by adenoid growths, enlarged tonsils, foreign bodies, etc. These children were all well cared for, and properly clothed.

A peculiar feature of these cases is that the sixteen cases that had enlarged tonsils and adenoids in the vault, all followed either diphtheria, scarlet fever or measles; while the five purely catarrhal cases gave no history of these diseases but all gave evidence of a strumous or scrofulous diathesis with frequent colds.

I have purposely avoided confining my remarks in this paper to any special variety of cases, but have included all cases that have applied for catarrhal treatment, and from a careful study of these cases, I have thus far reached the following conclusions:

That hypertrophied turbinates, adenoids in the vault, follicular pharyngitis, and enlarged tonsils, are very liable to follow diphtheria, measles and scarlet fever, while the exfoliation of the epithelial coat or the purely catarrhal variety, is more likely to follow repeated colds in the strumous or scrofulous children.

If these two points were more carefully studied by the general practitioners, and less advice, such as consoling the parents and themselves that the child will soon outgrow the difficulty, there would be fewer death certificates to sign, and fewer seeking ear trumpets when older.

When we consider that the treatment involves no risk to the patient and that these growths are the seat of repeated attacks of acute inflammation which is liable to extend to other organs, as the ear, is sufficient evidence that we should not wait for nature to effect a cure through absorption and atrophy.

While there is a tendency to glandular atrophy, at puberty, they seldom entirely disappear, but remain as a constant source of naso-pharyngeal catarrh. The fact that these patients get better after they arrive at the age of puberty, is largely due to the arrest of glandular growth, and the great development which takes place at this age, causing the enlargements to occupy less space in the air passages.

As a rule, we are warranted in giving a favorable prognosis in these case, even when extensive ear complications have set in. In fact, many cases do not apply for treatment until the ears become involved.

The treatment of these cases embraces general and local, to which I will refer briefly. Constitutional treatment with tonics and cod liver oil, is indicated in cases where the general health is impaired by imperfect oxygenation of the blood and disturbed sleep from interference with the normal respiratory functions.

The local treatment in the purulent variety consists in some mild alkaline solution to keep the parts clean of the muco-purulent discharge, followed by some slight astringent. The cleansing lotions are best applied with a small hand atomizer. Douches are objectionable as a rule.

The cases should be watched and the treatment changed as the case demand.

In those cases of glandular hypertrophy, unless seen in the beginning, nothing short of surgical interference and a thorough extirpation of the offending structure will effect a cure.

This is best done by cutting instruments or snare. Owing to the prejudice of many to surgical operations, we are compelled to resort to chemical agents and the cautery for the destruction of these growths. I prefer using the galvano-cautery when not permitted to use cutting instruments, but complete extirpation by surgical operation is always to be preferred to any other method.

The general law of surgery applies to all of these cases, when there is an offending obstruction, the sooner it is removed, the easier the cure and the less liability to complications.

Discussion.

Dr. Casselberry, Chicago:—The term "catarrh" is objectionable as defining too little, as referring to its symptom merely of discharge or disturbance in the upper respiratory tracts; we should seek to become more explicit in our nosology and this the author of the paper has done, by well describing the various forms of rhinitis, etc., and their causes, still another such cause I would suggest to be not infrequently a nasal rhinolith or calculus which may form during an acute attack and then perpetuate the disease.

Too much stress cannot be laid upon the importance of treatment in children, because irreparable damage to the ear is still deplorably common simply from neglect, or inefficient treatment. I believe all such cases to be capable of cure if promptly and effectively handled.

With young babies, who suffer frequently from purulent rhinitis, the result of infection by the vaginal discharges during birth or otherwise, I advise thorough cleansing with an antiseptic and alkaline lotion, such as *Dobell's solution*, injected into the nostrils by means of a syringe; a medicine dropper may be made to serve as a substitute for a syringe in the hands of the nurse or mother. Sprays, I find to be too slow in use and to frighten the child. Adenoid vegetations should be removed, but the naso-pharynx seems to be an active absorbing surface and the galvano-cautery among a mass of adenoids, is apt to produce such a large necrotic eschar that I have had several cases of septic infection follow its use. Hence, I prefer the cutting and scraping operations. Many mild cases can be done by the finger nail; others by cutting forceps or curettes, rapidly or by repeated sittings with or without a general anæsthetic. Many children, by proper management, can be induced to tolerate the operative treatments; others cannot and then ether anæsthesia may be employed.

To be more explicit regarding the cases for operation under ether: 1. When the faucial tonsils should at the same time be removed. 2. For the removal of large hard dense fibrous adenoids—those not readily scraped away by the finger or curette. 3. Those in which it may be expedient to use a general anæsthetic on account of the unwillingness of parents to see their children suffering and bleeding while conscious. The risk of anæsthesia is less than the damage liable to ensue if the "avenoids" are not removed at all.

When ether anæsthesia is complete, the child is held in a sitting position by an assistant, the mouth held open by a gag, the faucial tonsils first removed by a cold wire snare which is armed by a steel wire, heavier than usual, so that it will maintain the contour of its loop. This is placed against its tonsil and the tonsil then drawn outward and steadied by a volsellum. This snaring can be rapidly done, without hæmorrhage. Guided by the finger its adenoids are then removed by cutting forceps. At times of active hæmorrhage, the child can be inclined forward for a couple of minutes so that the blood will flow out of the nose. The whole operation need not occupy over half an hour and there is little soreness following it. The results are highly satisfactory.

Dr. John North, Toledo, Ohio:—I do not like the term catarrh. Catarrh is simply a symptom of some other trouble, either constitutional or local. In these cases of purulent catarrh we find some cause that acts upon the cells, we find in the second layer of mucous membrane, if these cells become ripe in a healthy membrane they form the epithelial cells, if from some cause they are modified they are thrown off from the membrane as mucous corpuscles, if they are abated in the development they become pus corpuscles.

Where there is enlargment of the so-called lymphatic tissue of the upper respiratory tract, I get good results from the local application of 60 grains of sulphate of copper to the ounce of water. I also give some form of the iodides. Iodide of iron if necessary or iodide of ammonia.

Dr. H. W. Loeb, St. Louis, thoroughly agreed with the writer in his designation of the causes of nasal catarrh in children and also in his statement as to the importance of its early treatment. In the removal of adenoid vegetations in the vault of the pharynx, he has been accustomed to perform it very frequently without the use of an anæsthetic. A small portion is removed every second day and thus far the result has been satisfactory. No pain is necessarily occasioned and patients readily submit to such manipulation without resistance.

Instead of using a cold wire snare, the Doctor has used a galvano-cautery snare, which he has devised and which permits the removal of the tonsil in a very short time, no hæmorrhage resulting.

Dr. Waxham said: The papers to which we have listened have been so excellent that I hesitate about taking part in the discussion, but there is one thought to which I would give expression. I must confess that I am skeptical as to the occurrence of a simple croupous rhinitis independent of diphtheria. A case coming under my observation led to this skepticism. A patient, nine years old, was brought to my office with a well marked membrane in one nasal cavity which ran the usual course and without extending to the other nasal cavity or to the pharynx. As there were no constitutional symptoms, no fever and no rise of temperature, the case was not isolated as it was considered not contagious. In a few days a young infant in the family developed genuine diphtheria, involving both nasal cavities, the pharynx and the larynx, proving fatal. This case, I confess, has made me extremely skeptical as to the non-identity of croupous and diphtheritic rhinitis and has convinced me of the necessity of isolating all cases of membranous rhinitis.

Dr. DeVilbiss of Toledo:—I object to the effort that is being made to drop, or do away, with the word catarrh, for it is a word that is familiar to everybody, and it is the name catarrh more than any other that influences the laity to seek advice for their maladies. It is the business of the specialist to look into the cause and not stop to quarrel with the name. Therefore I am pleased with the term as used in the paper, and am opposed to dropping the word catarrh until it is demonstrated that there is a word that will more fully meet the indications.

PHENACETIN is said by Dr. Green to diminish the frequency of calls to urination in elderly people, especially at night, and that ten grains at bedtime will often secure rest for those who habitually rise once or more during the night.—*Universal Medical Magazine.*

HYPERTROPHY OF THE ANTERIOR TIP OF THE MIDDLE TURBINATE BODY OF THE NOSE.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY G. V. WOOLEN, M.D.,
OF INDIANAPOLIS, IND.

There is a class of symptoms connected with many cases of catarrhal disease of the nose which is ordinarily taken to indicate the disease in its totality, but not regarded as having any special signification. I refer to frontal and basilar headache, deep orbital pain often bilateral, and not unfrequently unilateral, when it is termed hemicrania; mental hebitude, sometimes associated with defective memory, and again bordering upon melancholia, migraine, epilepsy, etc.

Now we do not have these symptoms in childhood, where we find the disease uncomplicated, either as suggesting conditions which would create the disease, or with those resulting from it as usually witnessed. Therefore we must look farther for their correct signification.

They have been regarded as gastric in origin, and as gastric catarrh so commonly accompanies the nasal and throat trouble, it is easily misleading. But closer analysis will reveal that many subjects of the gastric complication do not have the symptoms, and *vice versa.*

This analysis will also reveal that all of these conditions expressed by this category of symptoms, center in those of deep orbital and supraorbital pain or neuralgia with frontal and basilar headache. Now what can the ordinary catarrhal process have to do with this condition of affairs?

It is well known that not all cases of catarrhal disease have these manifestations. And in fact, many attended with the most direful results, both atrophic and hypertrophic, leading to grave pulmonic and other lesions, are wholly without these symptoms. And yet, in the whole range of disease this combination of symptoms is not so marked or persistent as is found in many cases of nasal catarrh.

Why neuralgias of the first division of the fifth nerve exist unilaterally (hemicrania), or bilaterally from the supposed gastric and other causes, and not of the other divisions, is not heretofore explained.

In a paper entitled "Nasal Differentiation," presented to the Mississippi Valley Medical Society in September, 1889, and subsequently published in THE JOURNAL of this Association, I called attention to a full and complete appreciation of the anatomy and physiology of the parts as essential to a correct interpretation of the pathological conditions of the nose.

The text-books on anatomy describe the nose as the organ of the special sense of smell, and would lead us to believe that it was primarily for that purpose; whereas one may have good health and not be capable of smelling at all. But one cannot be well and not use the nose for respiration and as a conduit for secretions from it and the accessory cavities. That which spoils the nose for this purpose is that which leads to obstruction and pressure irritation with defective drainage. In the great majority of cases this is hypertrophic disease.

In the paper referred to, I attempted very briefly to locate the pathology of the symptoms heretofore enumerated to the ethmoidal region, and more especially to hypertrophy of the anterior tip of the middle turbinate, or lateral process of this bone.

Much has been written about hypertrophic disease of the nose in relation to the catarrhal process, but the inferior turbinates have received the greater attention, manifestly because their enlargement interferes more with the respiratory act and general drainage of the nose. But one of the commonest results of this hypertrophic process is enlargement of the anterior tip of the middle turbinate. This may be unilateral or bilateral, and associated with or without corresponding disease of one or both of the inferior turbinates. It may occur also without further hypertrophy of the middle turbinate—largely so according to my observation, and appears as a globular or oval bright-red, glistening mass, filling the naris in the upper region according as the hypertrophy is uni- or bilateral. These may at times be pale and shrunken or at others very red, irritable, completely blocking the naris. Indeed, this irritable congested condition may be found confined to one side only, and when so, the pain and neuralgias are located on that side, while the other may be wholly quiescent.

When the hypertrophies are bilateral and of equal size the septum remains central, otherwise it is deviated to the side opposite the mass, and is frequently found pressing against the outer side of the naris, causing as much pressure and irritation in it, as does the hypertrophy on the opposite side.

The question as to why a hypertrophy and a corresponding deviation opposite, whether the deviation is due to presssure from the hypertrophy, or that the hypertrophy is due to nature's effort to fill the cavity or vacuum caused by the deviation, seems to me unsettled. Probably the former. It is scarcely the result of traumatism and consequent breaking down of the septum in these parts, as it is too well protected by its outer bony coverings.

These hypertrophies being situated so far anteriorly, do not interfere with smelling unless the whole turbinate is involved, and then probably only in the later stages, when the atrophic process or polypoid degeneration obtains. To fully appreciate the disturbances resulting from this phase of disease one needs to review the outlines of the anatomy of this region.

The naris in its perpendicular axis is an irregular oval cone, with apex between the orbit and perpendicular plate of the ethmoid. The apex of this cone is broken into an uneven surface by the opening of the ethmoidal cells through which the frontal sinus discharges. In health the lateral mass of the ethmoid, which forms the outer side of this cone, and by its projection into the naris forms the middle turbinate body, diminishes in its anterior termination to a flattened projection slightly overhanging the opening of the ethmoidal cells, called the infundibulum. This projection is scarcely or not at all visible with our best means of nasal illumination and inspection.

These immediate parts are devoid of anything of further anatomical or physiological interest, except the nerve of sensation of the anterior region of the nasal cavity, the nasal, a branch of the ophthalmic or first division of the fifth, which enter the naris at its apex, from the cranial cavity, having given off in the orbit its own branches, the ganglionic, ciliary and infratrochlear. It divides into two branches which descend on the septum and outer wall of the naris. This nerve in its relation to its own branches, and as a branch of the first division of the fifth, if disturbed, gives the solution doubtless to much that we already have hinted at, *i. e.*, orbital and supra orbital neuralgias, frontal and basilar headaches following the fifth nerve, hemicrania, when only one is involved, etc. In other words, it is only a question of pressure irritation of this nerve. The blood and nerve supply to these parts being so intimately associated, it could not be otherwise than that they would be similarly affected, *i. e.*, when the nares were irritated and congested, a similar condition would prevail in all contiguous parts. Thus it is that many eye cases are now relieved by the nasal treatment.

When this special hypertrophy obtains and causes irritation, it is by its development between the branches of this nerve, therefore pressing injuriously in both directions. The pressure may be greater on the opposite side, however, from the extreme deviation of the septum and consequently the hemicrania and symptoms of distress will be on that side equally if not greater, than on the side of hypertrophy.

As a local point of reflex irritation, one would expect it to act favorably in the production of such troubles as epilepsy, and in a number of cases in which the fixed point of irritation seemed in this region, I have found this pathological condition to prevail, and upon its removal, immediate amelioration invariably occurred and apparent recovery in at least fifty per cent. of cases.

These hypertrophies, however, may exist without causing trouble when there is an abundance of room in the region of the naris. As a fact, it is not always the size which determines the gravity of the symptoms. A roomy naris may tolerate a large growth with impunity, and conversely a small one may not tolerate a small growth.

It is only when we have pressure that inconvenience follows. That this pressure is greatly hurtful in many of these cases by obstructing the outlet of the ethmoidal cells I have repeatedly proven by removing the greatly enlarged and overhanging turbinate tip and witnessing the retained secretions flow out through the infundibulum into the nasal cavity. This is also frequently seen in the subsidence of "a cold in the head."

The retention of these secretions accounts additionally for the deep orbital and ethmoidal pains encountered in this class of cases.

This blocked and congested condition of these parts unavoidably affects cerebration and furnishes a satisfactory solution of the cause of the mental hebetude, melancholia, and defective memory. The shrinkage of the obstruction either by cocaine, local treatment, dry weather, change of season, or climate, gives relief, and more positively than these, the removal of the obstruction brings permanent relief, apparently a positive proof of the causative relationship. There is nothing that I do in rhinological practice with such certain expectation of success as the removal of these masses for the relief of these symptoms.

In this connection I will state that I have invariably noticed the congestion of the nose in the ordinary "cold in the head" begins at the tip of this turbinate, if seen *sufficiently early*.

This hypertrophic tip is prone, in some cases, to undergo polypoid degeneration, prior to, and even without the other portion of the turbinate, at all, and when removed will be found to have a transparent apex resting on an opaque base, which shades off into the ordinary hypertrophic tissue, that may constitute the major portion of the mass, and where the whole turbinate is involved in the polypoid degeneration it also wholly undergoes this process.

Dr. Edward Woakes, of London (Nasal Polypi, etc., London, 1887), very ingeniously explains the troubles traceable to this region as arising from ethmoiditis, and claims there is a necrosing process to be found in the greater number of cases in the middle turbinate. However this may be in the English subject, as exhibited in his clinics, I have not subsequently found it to be true in the American, and many of the troubles which he claims arise from disease of the middle turbinate, I think are clearly referable to other regions of the nasal cavity. Furthermore, he claims it to be caused by inflammation of the ethmoid, which is disproved by removal of the hypertrophic tip and consequently pressure irritation and defective drainage, and thereby relief of the various symptoms.

The method of dealing with this enlargement is wholly by the cold snare. If it be as we have shown, an hypertrophy, we can hope to reduce it by no method of medication, and the treatment of these various symptoms has proven in the past to be at most, but palliative.

The part being so intimately associated with the anatomy of the base of the skull, cauterization is not to be thought of, and in fact fatal meningitis has been reported to have followed such practice.

The hypertrophy will usually be found to involve all of the tissues of the tip, so that periostitis and cranial troubles would be easily awakened by cauterization.

If removed properly a tip of the bone is usually included in the mass. To do this completely the loop of the snare should be carried under tip, allowing the canula of the snare to pass anteriorly to the mass and gently pressed in front and above till slight resistance is felt, when it should be held steadily till the loop is brought home. This I always do as rapidly as possible to abbreviate the pain and have never had a troublesome hæmorrhage. If the mass is large cocaine can be used, but if not, it is apt to shrink it so as to let the loop slip over it.

It should be remembered that in a state of health no one is able to place the snare loop over this tip because of its retracted and flattened shape. Usually the upper region of the naris is so filled with the tip that any preparatory antiseptic measures cannot be used, but when the small hæmorrhage which follows the removal has ceased, the parts should be thoroughly cleansed and dressed antiseptically, and healing will occur surprisingly soon, even when the tip of the bone is removed. It is my custom to keep my patient fully under the influence of the bromides prior and subsequent to the operation for several days.

Following the suggestion that colds seem to manifest themselves primarily in this region, it has become my custom, also, as suggested originally by my assistant Dr. Hibben, to remove this mass first when it becomes necessary with other surgical proceedings, so as to avoid exciting sympathetic troubles in this region, and with most satisfactory results.

Discussion.

Dr. Casselberry, Chicago:—I recognize several forms of enlargement of the anterior end of the middle turbinate body.

1. Simple hypertrophy confined to the soft parts.
2. Myxomatous hypertrophy, or degeneration either alone or associated with hypertrophy elsewhere in the nose.
3. Enlargement of the bony-base of the body together with the overlying soft tissues.
4. Necrosing ethmoiditis of Woakes with enlargement and duplication of the body, it appearing like two turbinates side by side with a slit between.
5. Cystic formation of the bone.

The treatment is necessarily surgical. For this purpose I prefer first the snare, but in some instances it is difficult to pass this; then a turbinate scissors, which I devised and described for this purpose, in connection with the radical treatment of myxomata which spring from beneath this turbinate body. Also at times a fine saw of the Roe pattern can be used.

I am not altogether in accord with the writer regarding the exclusion of the electro-cautery in operating on this body. I have made this a part of the treatment of nearly all cases of hypertrophic rhinitis which usually suffer from hypertrophy of the middle turbinate, as well as the inferior body. The only well authenticated case of meningitis following cauterization in the nose, reported by Wagner, of Germany, followed cauterization of the inferior body. Cauterization anywhere in the nose should be done with strict antiseptic precautions, and perhaps greater care, if possible, be used concerning the middle body, but if care be observed to cauterize only at points where drainage will be reasonably good—that is, along the inferior surface of the body, it can be safely done. Too much surface should not be burned as considerable cicatricial contraction subsequently ensues and dry incrustation is certainly a possible result.

Dr. Seiss called attention to the jamming of the *middle* turbinate in cases of sclerosis of the lower scrolls—the respiratory lumen being too wide while the middle body was subjected to pressure. The enlargements are prone to undergo myxomatous degeneration, becoming polypoid in character.

Reported case of lady aged 24, who suffered from great asthenopia, headache, and mental fatigue. On examination a small myxomatous mass was found on the septum pressing against the middle scroll. A number of light galvano-cautery incisions were made into the mass, and sedative sprays applied over an interval of some weeks. Complete relief resulted, which at the end of a year continued permanent.

Dr. Randall, Philadelphia, wished to confirm the statements of Dr. Seiss as to the value of cauterization or other treatment of the hypertrophic middle turbinal in some cases of asthenopia. Nasal examination constituted a part of his ocular investigation in such cases and he could report many cases of good result, not so brilliant, perhaps, because he had treated them himself instead of referring them to a more skilled worker. A recent case, seen with Dr. Seiss at the Polyclinic, had shown very marked relief of mental symptoms suggestive of meningeal irritation as the result of cauterization of his middle turbinate.

Dr. Wright, Brooklyn:—Cautery of the middle turbinate bone, I have been accustomed to do with some caution, more from theoretic considerations—of the nearness of the middle turbinated bone to the base of the brain. I am accustomed to do it by means of a fine platinum point plunged into the submucous tissue. When healing occurs the turbinated body shrinks away from the septum and so relieves pressure. This method is only applicable where there is no bony hypertrophy, where the mucous membrane is alone the offending body. Although I also use the nasal snare where the hypertrophy is large and bulbous, I desire to emphasize strongly the danger of taking away too much of the middle turbinated body, as when this is done the base of the skull and the important structures it supports are exposed to the blast of air from below in blowing the nose and in strong expiratory efforts. One such case forms a part of my experience, where severe headaches lasted for several months caused in this manner. Where there is bony hypertrophy to be reduced I have, in a few cases, succeeded in doing so by morticing the under surface of the middle turbinated bone with a nasal trephine and then with strong probe or forceps forcing the inner plate of the mortice outward against the outer plate—in other words the middle portion of the bone is removed and the outer shell left on each side with the investing mucous membrane on each side.

Dr. J. Walter Park, Harrisburg, Pa:—I can fully substantiate the mental condition in cases of nasal stenosis, due to hypertrophy of the middle turbinated bodies, cited by Dr. Woolen, of Indianapolis, but differ somewhat in its treatment. Mr. S. was referred to me by the Supt. of the State Lunatic Hospital, of Harrisburg, Pa., who was suffering from the incipient stages of insanity and nasal stenosis. Physical examination showed a hypertrophied condition of both middle turbinated bodies, and undoubted suppression of the free discharge of mucous from the frontal sinus. After cauterization and the entire removal of this stenosis, there was an entire removal of the mental symptoms, and the patient at the expiration of seven months still remains perfectly well. I differ with Dr. Woolen (who stated that cauterization caused meningitis and should not be used) and will say that my experience has been entirely with the actual cautery, and have had no bad results whatever from its use.

DISEASES OF THE NASO-PHARYNGEAL PORTION OF THE RESPIRATORY TRACT, THEIR RELATION TO, AND ULTERIOR EFFECTS UPON THE GENERAL HEALTH.

Read before the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Late of Chicago, Member of Chicago Medical Society, and American Medical Association.

Mr. President, Officers, and Members of the American Medical Association, Gentlemen:

I here submit for your kind consideration, an article entitled, "The Diseases of the Naso-pharyngeal Portion of the Respiratory Tract; their Relation to, and Ulterior Effects upon the General Health."

My reason for selecting this subject, is because of the practical relation which it sustains to many of the diseases coming under the observation of the general practitioner. But before proceeding farther, I wish to offer an apology to the Association for briefness, as the subject is too extensive to expatiate upon, at any considerable length, in the space here allotted.

Owing to the geographical distribution of nose and throat affections in this country, their prevailing frequency in our large cities, and along the borders of our great lakes, it is an experience of most frequent occurrence to observe the effects of sudden changes of temperature, upon the human organism.

Fluctuations of temperature and humidity with their concomitant barometric variations, are conjointly responsible for the induction of vaso-motor disturbance, causing in the individual, an inequality of the circulation, thereby contributing an influential factor to the production of vascular fullness, and blood stasis of the mucous membrane lining the nasal cavity, involving the inferior and middle turbinated bodies, and not infrequently extending throughout the mucous structures of the naso-pharyngeal cavity. These phenomena and the hyperæmia resulting therefrom, represent the primary deviation from the physiological condition, and constitute the first step in the pathological action that occurs in the process of taking cold. *That a wide-spread* tendency exists, exerting its peculiar influence, in predisposing individuals to take cold, is I believe the common observation and experience of the majority of physicians.

This statement I believe finds confirmation in the fact that a large proportion of the population in our temperate climates, are affected with a mild grade of chronic inflammation of the nasal mucous membrane; chronic inflammation of any anatomical structure, whether it be bone, tendon, muscle, nerve, synovial, serous or mucous membrane enduces in such structure, a hyper-sensitiveness to exciting causes of disease.

Of etiological influences, the sudden alternation of heat and cold, and the transition from a dry to a humid atmosphere, or *vice versa*, are the most influential in the production of colds, coryza, and the development of inflammation of mucous membrane, in any cavity or portion of the body to which such membrane is distributed as an anatomical part.

Of other important etiological conditions may be mentioned debilitating influences, excitement, previous and present disease, hereditary constitution, temperament, age, sex, occupation, etc. But other disturbances and cognizable agents, are circumstantial as exciting causes of disease, the most influential of which are: 1, mechanical influences; 2, chemical influence; 3, mental emotion; 4, nervous influences, and the so-called reflex neurosis; 5, defective sanitation, as imperfect ventilation; cleanliness or drainage; 6, imperfect digestion; 7, defective elimination; 8, excessive or deficient physical exercise; 9, excessive evacuations; 10, the so-called auto-genetic poisoning; 11, and last, epidemic, endemic and infectious poisons.

Owing to the prevailing frequency of chronic mild rhinitis and its existence in many individuals, to whom it is the cause of but slight inconvenience, or it may be scarcely any except when a cold is contracted by one so affected, this chronic process is developed into an acute inflammation. I am therefore disposed to believe, that chronic affections, such as rhinitis, post-nasal catarrh, or naso-pharyngitis, tonsillitis, laryngitis, tracheitis, bronchitis, etc., are the results of repeated colds, or attacks of acute inflammation, but that when a rhinitis once becomes chronic, it assumes the rôle of a predisposing cause in taking cold, by reason of the irritability and supersensitiveness which characterize inflamed structure.

Indeed for this reason an often recurring coryza is a presumptive diagnostic symptom of chronic rhinitis, and should always be supplemented by a rhinoscopic examination of the naso-pharyngeal cavity, in order to determine the differential diagnosis. The results of an exposure to cold, will differ in different individuals according to habit, occupation, degree of exposure, etc., and the course of morbid action will be largely dependent upon dyscrasiæ, susceptibilities, temperament and inherited or acquired conditions, etc. In the majority of cases, the result is an acute inflammation of the mucous membrane, which lines the nasal passages. In others, it gives rise to pharyngitis and tonsillitis.

In some instances laryngitis, tracheitis and bronchitis are developed; while in others, irritable bladder-cystitis, nephritis, oxaluria, lumbago, rheumatism, and neuralgia may occur. This diversity in results upon different people, from exposure to cold, is most readily explained when it is observed that inflammation resulting from an attack of cold locates itself by preference in the weakest part of the organism. To illustrate, an individual of highly nervous temperament, if anæmic and debilitated, when exposed to cold is liable to an attack of neuralgia. A person subject to rheumatic trouble, upon exposure, most frequently contract an attack of rheumatism. If there be a bronchial weakness, an exposure will be followed by an attack of bronchitis, or perhaps bronchial asthma.

The neurotic temperament, predisposes, and the effects of extreme debilitating influences from prolonged mental strain or from physical fatigue, invariably renders the subject peculiarly susceptible to cold in the head. Occupation, such as bakers, blacksmiths, cigar makers, firemen, engineers, furriers, millers and chemists, whose business necessitates the endurance of alternate hot and cold temperatures, or the continual exposure to dust, irritating gases or poisonous vapors, renders the individual especially susceptible to rhinitis or naso-pharyngitis.

The frequent association of such nasal diseases as chronic hypertrophic rhinitis, nasal stenosis, polypus, post-nasal adenoids, hyperplastic and hypertrophic inflammation of the nasal mucous membrane, and their relation to various neuroses as chorea, asthma, paroxysmal sneezing and hay-fever; also the disappearance of the secondary affections upon correcting the nasal abnormalities, suggests causal relation.

Intra-nasal diseases are therefore frequently the cause of a series of secondary affections, the development of which are often anatomically remote from primary cause. These secondary diseases may occur from direct irritation, and continuity of structure, or from reflex action. From the former cause may be mentioned, Eustachian catarrh, acute catarrhal otitis media, pharyngitis, tonsillitis, laryngitis, tracheitis, bronchitis, gastritis, duodenitis, enteritis, etc. While to the latter may be attributed the so-called sensory, motor, or secretory neurosis of peripheral origin as nasal or bronchitic asthma, paroxysmal sneezing and hay-fever, asthenopia, epiphora, conjunctivitis, supra-orbital, hemicranial or trigeminal neuralgia.

The symptomatology of intra nasal disease, both objective and subjective, will depend upon the form of disease present.

In polypus the subjective symptoms are generally those of obstructed nasal respiration, frontal headache, intra-nasal pressure, with a sensation of constriction across the bridge of the nose, snoring during sleep, anosmia, pharyngeal and laryngeal irritation and naso-pharyngitis.

The nasal obstruction may be bilateral or unilateral, partial or complete, or alternately unilateral, according to the anatomical attachment of the polyp, and the nature of the pedicle, whether sessile or pedunculated.

Their history usually dates from a period when the patient experiences increased susceptibility to colds in the head; the attacks repeated with increased frequency, until the catarrhal symptoms of the patient are fixed and constant. Cough, asthma, palpebral and lachrymal irritation, and neuralgia may occur as reflex symptoms more to be regarded as sensory neurosis of peripheral origin; while vertigo, loss of memory and inaptitude for mental and physical exertion, are symptoms to be referred more particularly to the anæmia resulting from interference with respiration, and other blood deficiencies and contaminations, from further secondary implications, rather than to that of reflex irritation.

A profuse rhinorrhea is a common condition, when two mucous surfaces are brought into contact with each other, the effect of which is very debilitating upon the patient. The speech is usually thick and guttural from a semi-paretic condition of the palate, which will be observed to possess the usual characteristics of nasal obstruction.

The symptoms are all more aggravated during damp weather, owing to the hygrometric properties possessed by œdematous structures.

When buccal respiration has been practiced for a considerable period of time, the alæ nasæ, may, from want of use, acquire a tendency to collapse.

The sense of smell is usually seriously implicated, although taste of flavors may be normal. Tinnitis aureum and deafness from catarrhal inflammation of the Eustachian tubes or direct mechanical occlusion of them is not uncommon, nor should it be forgotten that lachrymal abscess has resulted from pressure upon the nasal duct. (Greville MacDonald.)

The symptoms of nasal stenoses, from other causes, differ from those of polypus in this particular: that in stenosis the obstruction is permanent with change of position, which is not the case with polypus.

Obstructive nasal disease aside from its influence over speech, also affects intonation of the voice to a considerable extent. The removal of post-nasal obstruction therefore raises the pitch of the voice, and improves phonation.

The local symptoms of chronic catarrhal rhinitis are of small importance and of little diagnostic value; they are indicative of nasal disease, a rhinoscopic examination being necessary to complete the diagnosis.

The important symptoms are buccal respiration, inability to blow the nose, headache, vertigo, the typical buccal speech, and snoring during sleep, and not infrequently rhinorrhea.

The general symptoms are those of languor, lassitude, and fatigue, which often appear worse in the morning than at night. There is usually present muscular soreness, limited sometimes to groups of muscles, which are symptomatic of systemic depression from mucoid poisons and various pepto-toxines, leucomaines, albumoses and other system poisons.

There is usually a furred tongue, a bad taste in the mouth, or a dry sticky sensation in the throat.

The bowels are usually constipated, and in the majority of cases a strong tendency to melancholia exists; while the closed mouth, fœtid breath, inspissated mucus hawked from the throat more often than blown from the nose, and the speech approximating the cleft palate patient, are associated with the reverse condition, viz.: abnormal patency of the nasal fossæ, and it is in such cases that atrophic changes usually occur. The character of the discharge aside from its degree of inspissation, whether mucous or muco-purulent, is often of little importance if bilateral; but when purulent, or unilateral, it may be of considerable importance, especially as suggesting grave structural disease of the ethmoidal cells, or empyæma of the maxillary frontal or sphenoidal sinuses.

The distinction between mucus and pus can easily be made both chemically and microscopically. Pain is not always important, cough is occasionally a prominent symptom in obstructive nasal disease, and apart from concomitant laryngitis, nasal cough is usually dry and barking in character. The olfactory function is of but slight value in diagnosis, as very insignificant and imperceptible causes interfere with its performance. Indeed the objective appearances are the only symptoms of much diagnostic importance.

The differential diagnosis between true rhinitic hypertrophy of the turbinated and vascular tumefaction of the erectile tissue is easily accomplished, by the application of a solution of cocaine, which causes vascular collapse of the erectile tissue, but is without effect upon true hypertrophy; vascular tumefaction, also pits on pressure, similar to œdematous structures,which is not the case in hypertrophic tissue.

In all intra-nasal diseases except where grave structural lesions exist such as caries, necroses, exostoses, ecchondrosis, syphilitic ulcerations and septum perforations, the primary or local manifestations of disease frequently disappear with the inauguration of secondary affections.

It is of frequent occurrence to find a hypertrophic rhinitis involving the inferior and middle turbinates to a degree of almost complete occlusion of the nasal fossæ, in a patient who is seeking relief from a bronchial asthma, gastritis, neuralgia, rheumatism or anæmia, when in fact, the information of the existence of a primary intra-nasal disease will be a very great surprise to the patient, who, notwithstanding the fact that the nasal fossæ may be almost completely obstructed from chronic hypertrophy or hyperplastic tissue, declares he experiences nothing wrong in the head, but alludes emphatically to a bronchial cough, or a gastric distress, soreness or distention, or to various areas of muscular soreness or neuralgic sensations, or perhaps, to subscapular or lumbar pains, etc., so that the sufferer's attention is frequently directed from a primary disease, to the distressing subjective symptoms of secondary affections.

The direction in which the secondary disease may extend, will be largely dependent upon conditions,such as inheritance,dyscrasia, peculiarities, predisposition, temperament, occupation,etc.

A normal structure with its perfect performance of function, constitutes the physiological standard of health. Pathology begins by deviation from the normal processes, and relates exclusively to morbid or unnatural conditions in living structures. In other words, it is altered physiology and can only exist in living matter.

The first or primary deviation from the normal standard, upon exposure, is vascular disturbance, and stagnation of blood in the mucous membrane and erectile tissue of the nasal cavity. This leads to swelling, redness of the parts, with increased secretion of mucus, and as the inflammation thus induced subsides, it leaves a slight hypertrophy and irritability.

The repetition of these phenomena, with repeated attacks of colds, coming and going, extending over a period of years, will in most individuals, establish a chronic rhinitis,or naso-pharyngitis, commonly termed post-nasal catarrh.

The continuous and excessive formation of mucus gravitating and trickling down from the post-nasal space into the pharynx, there to be dislodged mechanically and swallowed along with food and drink, will, in due time, initiate pathological fermentation of the gastric contents. The acrid and irritating effect of fermentation products upon the gastric mucous membrane and its glandular structures, will if allowed to persist, establish a chronic gastritis.

In the passage downwards the chyme, with its pathological fermentation products, will in like manner develop intestinal fermentation, irritation and inflammation, and if the cause remains operative, will, by continuous repetition of this abnormal condition establish chronic duodenitis, enteritis, and their consequences.

It matters not how much an individual can eat, if the gastric and intestinal mucous membrane is unable to digest and absorb it—nutrition will of necessity be seriously impaired, and the living bodily structures be deprived of their physical and vital power.

Not only will the system in general suffer the effects of inanition, but additional depression and exhaustion is superinduced from contamination of the blood with mucoid poison, leucomaines, peptotoxines and the products of bacterial and pathological action.

But the function of the digestive tract is not only impaired for digestion and absorption, but it is equally embarrassed in its eliminating activities for the removal of waste products from the system.

The existence of such a chain of morbid derangements upon the system, may eventuate in any of the following conditions, viz.: anæmia-chlorosis, leucocythemia, copræmia, neurasthenia, neuralgia, rheumatism, abscesses, furuncles, carbuncles, eczema, etc., and if a latent strumous tuberculous or syphilitic dyscrasiæ exists, it may be speedily aroused into energetic morbid action, the effects of which further exhaust the system and complicate pre-existing conditions.

Obstructive nasal abnormalities, as polypus, structural stenosis, hyperplasiæ of the turbinates, with vascular tumefaction of the erectile tissue, hypertrophic rhinitis, fibroid growths, post-nasal adenoids, traumatic septum, deflections, etc., are seriously instrumental in the development of inflammation of the mucous membrane of the larynx, trachea and bronchial tubes, by reason of failure in elevating the temperature of the inspiratory current of air to that of the blood, and further by insufficiently moistening the ingoing current, and improperly sifting and freeing it from mechanical irritants.

So that in the complete or partial obstruction, where buccal respiration is compulsory, the air reaches the deeper respiratory passages, at too low a temperature, and in too dry or too impure a condition.

Hence intra-nasal disease stands in causal relation, not only to secondary diseases of the intestinal tract, but also contributes in no small degree in the development of laryngeal, tracheal and bronchial inflammations.

Obstructive nose diseases, are also influential in the causation of various neuroses, such as asthma, paroxysmal sneezing, hay fever and chorea; while catarrhal and general fevers are not infrequently produced from the same cause.

In alluding to the general prevalence of mucous membranous inflammation, both in Europe and in this country, and the great similarity of the endemic form: also the peculiar tendency, and the predisposition which catarrhal subjects exhibited during our late epidemic of la grippe, in contracting the latter with greater frequency and severity than individuals possessing healthy mucous membranes, leads me to believe that there exists some relationship or affinity between the two affections. In substance the two diseases differ only in the following particulars, viz.: mucous membranous inflammation is more generally endemic, chronic and mild, except where the chronic form is aggravated from exposure to cold into an acute condition, while in la grippe the onset is usually sudden, acute in its course with tardy convalescence, intense in its symptomatology, prone to complications and epidemic in form.

In their pathogeny they resemble each other in this particular, that there is present in both a neurotic and an inflammatory factor; that in both there exist the characteristic features of acute coryza, plus the general febrile disturbance. In la grippe, the lesions are those of catarrhal inflammation of the mucous membrane of the eyes, nose, ear, throat, larynx, bronchi, stomach or intestines; while in simple catarrhal inflammation the process is limited, showing no disposition to invade all the mucous membranes simultaneously. In influenza the severity differs in each locality and in the person attacked; in some the bronchial effects are the most severe, while in others the gastric symptoms are the predominating manifestations. La grippe in itself has not proved to be generally fatal, but increases the mortality of other diseases, thus raising the general death rate. The attacks may be repeated in the same individual while the epidemic is raging, by an ordinary exposure to cold, as in common mucous membranous inflammation. No specific microbe or bacteria has as yet been demonstrated to exist in either the endemic or epidemic form of the disease, so far as I am aware. Although fifteen or twenty different microbes of no acknowledged specific importance have been observed to infest mucous membranes.

To the following authors I am especially indebted for much valuable information in the study of rhinology, laryngology and otology, viz.:

The late Sir Morrell Mackenzie, London; McBride, Edinburgh; Greville MacDonald, London; Francke H. Bosworth, N. Y.; Beverly Robinson, New York; Sajous, Philadelphia; Meyer, Michael, Hamburg; Elsberg, Hack, Freiburg; Beard, New York; Lennox Browne, London; St. John Roosa, New York; Albert H. Buck, New York; Scheck, Munich; Schneider, Cologne; Krause, Berlin; Mygind, Copenhagen; Dundas Grant, England, and others.

AN IMPROVED GALVANO-CAUTERY SNARE; ITS USE IN THE NOSE AND THROAT.

Read in the Section of Laryngology and Otology, at the Forty third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

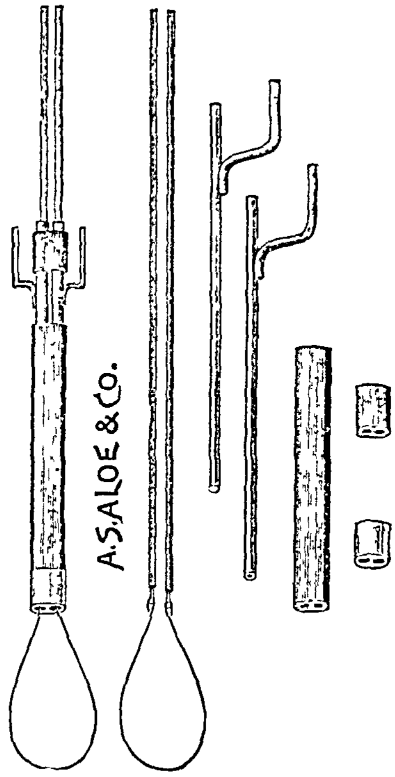
BY HANAU W. LOEB, A.M., M.D.,
OF ST LOUIS, MO.
PROFESSOR OF DISEASES OF THE NOSE AND THROAT, MARION-SIMS COLLEGE OF MEDICINE; LARYNGOLOGIST TO THE MISSOURI PACIFIC AND M. K. AND T. HOSPITALS; SURGEON TO THE NOSE AND THROAT DEPARTMENT OF THE MARION SIMS HOSPITAL AND THE GRAND AVENUE FREE DISPENSARY.

There is a just demand on the part of the medical profession for instruments which fulfil every requirement on the score of precision, efficiency and cleanliness, and just as nearly as an instrument approaches these essentials, so nearly perfect does it become. Furthermore, any change in an established instrument, which causes it to approximate this ideal condition of things, constitutes an improvement which merits adoption.

To any one who has used the galvano-cautery snares now in vogue, the thought must often have been presented that, in spite of the many advantages to be derived from their use, they exhibit many drawbacks which, long since, should have been overcome. So great, in fact, have these shortcomings appeared, that many have discarded the galvano-cautery from their armamentarium, and have adopted instead the cold snare of long ago.

A very considerable experience in the use of the galvano-cautery snare, has caused the writer carefully to consider the evident disadvantages, and, as a result of the formulation of his thoughts in this direction, the instrument now presented to the Society was suggested.

In its construction, the instrument is very simple, being made with a view of permitting perfect cleanliness. True, the old snares were thoroughly aseptic so far as the wire was concerned; for that, becoming red-hot, would naturally destroy all germs in contact therewith. But thorough asepsis or even ordinary cleanliness is precluded, *in such an instrument*, from the fact that, the canula being wrapped with silk or cotton thread, a drop of blood or a particle of secretion could not be entirely removed, and therefore constituted a first-class breeding medium for all sorts of bacteria. To obviate such a reasonable drawback, the instrument here presented has been insulated with hard rubber, which can be removed with ease from the canulæ at any time and boiled.



The canulæ themselves are readily removable from the other parts of the instrument, and hence are amenable to thorough aseptic preparation. They are a trifle larger than the canulæ ordinarily in use, but this does not in any manner affect their utility.

Another inconvenience, or rather expense, is the great length of the platinum wire which all previous snares necessitate; the average required being about 15 inches, quite a costly item when often broken. In the writer's snare only 3 or 4 inches are necessary. This result is accomplished by passing through each canula a stout copper wire containing an eyelet in its flattened end. Into this small opening the platinum wire is inserted and the ends bent so that, when the wire is pulled into the canulæ, it cannot escape. There is less inconvenience in threading this little eyelet than in passing the wire through the old canulæ.

An ivory tip similar to those for some time in use, and which is freely separable, completes the instrument.

The snare is applicable to the slide handle made by the McIntosh Battery and Optical Co., Chicago, Ill., from whom, as well as from A. S. Aloe & Co.. St. Louis, Mo., the snare may be procured.

The advantages of such an instrument, so manifest upon examination, have been amply and clearly demonstrated in actual practice. They may be stated as follows:

1. Cleanliness, as already detailed. Every portion is removable, the rubber insulator, the two canulæ, two copper wires, the platinum wire and the ivory tip; it is therefore easy to treat them as is usually done with all proper surgical instruments prior to operation. One may readily appreciate the greater satisfaction to the surgeon when he operates with an instrument which he is morally certain is clean, than when he knows that it can never be entirely free from the objection of uncleanliness.

2. Less expense. The platinum wire is not so readily broken, and when it is, may be replaced at a trifling cost.

3. The instrument is firmer, and therefore more easy of manipulation and use.

4. The current required is beyond a doubt considerably less. I have verified this a number of times, and when my storage battery has been out of order, I have, on a number of occasions, used one of the cells, instead of the two which I have found necessary with all other snares.

5. There is no danger of short-circuiting the current. This difficulty with other snares is by no means uncommon; for it not infrequently happens that when a body is engaged and the wire drawn taut, no current passes through the wire and therefore no action results. This is due either to connection of the wires below or to the absence of any electricity passing from the canulæ to the wire above. Such a condition of things is manifestly impossible in my instrument, in which the connection is made and maintained by means of the copper wire and is not at all dependent upon the canulæ, at their orifice.

The improved snare should increase the range of application and use of the galvano-cautery snare in the nose and throat, for it renders operations safe, certain and reliable procedures.

In removing tonsils, more than in any other particular, is this exemplified. Some six months ago I read a paper before the St. Louis Medical Society, describing the operation of removal of hypertrophied tonsils by means of the ordinary galvano-cautery snare. The use of this new snare has fortified my opinion that this is the safest and most satisfactory method for their removal. Tonsils in all conditions of hypertrophy, except when they are thoroughly impacted between the pillars of the palate (even then a small portion may be removed), are excised with more precision and with less danger and inconvenience than by any other method, while pain and the time required are not increased.

The *modus operandi* is simple. After applying a solution of cocaine to the mucous membrane, in order to render it insensible to the presence of the wire and moderately to anæsthetize it, the tonsil is drawn out from between the palatal pillars by means of forceps, and the snare is engaged so that as much of the tonsil may be removed as is desired or desirable. One need never fear that hæmorrhage will result in the adult, or that a portion of the palate in children will be accidentally removed. Bleeding never follows and healing is an uninterrupted sequence. The ear pain and the inflammation resulting from snare operations are no more severe or serious than from the tonsillotome operation. The snare may be used in cases where it is desirable to combine with the cauterization of the tonsil the removal of a small portion of the organ.

Of late, I have been using this snare in removing the uvula, instead of the scissors as I formerly did. The uvula is allowed to drop into the loop, the wire is drawn tight, the current turned on and the uvula removed, no forceps being necessary. I have noticed that in the twelve cases upon which I have thus far operated, the patients were able to eat at the succeeding mealtime, a rare occurrence in previous operations. The explanation would appear to be that the forceps or forks of the uvulotome draw down the mucous membrane so that more of the mucous membrane is cut away than of the muscular tissue, whereby a considerable portion of the latter remains exposed, making the whole organ, very naturally, exquisitely sensitive. Again, the stump, after the cautery operation, is more even, no hæmorrhage takes place and recovery is more rapid.

In the nose, of course, the snare is indicated wherever the old instrument could be used; in the removal of nasal polypi, portions of mucous membrane and of the turbinated bones, it suggests itself. From the certainty of its action and its advantages already given, it should displace the cold snare and the forceps in the removal of polypi—its action is quicker, no hæmorrhage occurs and recurrence is more infrequent. Besides, there is no need of after cauterization as when the cold snare alone is used.

Incidentally I may state that I am having all my cautery points covered with hard rubber instead of the thread or silk which have so long been obnoxious to me on account of the impossibility of keeping them clean. In this way a possible evil is overcome.

In conclusion, I desire to express my thanks to Mr. Lou P. Aloe for kindness and consideration in the development of the instrument which it has been my pleasure to present to the Association.

Since the foregoing was written the following communication was addressed to the writer:

"The snare is certainly possessed of advantages over the ordinary forms, notably among which are greater ease with which it can be cleaned, economy in platinum wire and less ampèrage required in heating. This latter feature showed very plainly when testing yesterday and to-day a new device for the use of the Edison current in galvano-cautery. Twenty ampères of current would not satisfactorily heat the ordinary form of snare; 10 to 15 brought your snare up to proper heat. (Signed) McIntosh B. and O. Co.,
C. Alfred Smith, Sec'y."

Quod crat demonstrandum.

303 North Grand Ave.

Sir Joseph Lister, having reached the age of sixty-five, the age-limit by the regulations of King's College, Edinburgh, has retired from the clinical lectureship.

COMPRESSED AIR AND SPRAYS IN DISEASES OF THE NOSE, THROAT AND EAR.

Read in the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

BY SETH SCOTT BISHOP, M.D.,
OF CHICAGO.

The use of compressed air in the treatment of affections of the nose, throat and ear is so indispensable and universal that it is somewhat remarkable that there should be a poverty of definite literature on the subject of its dosage. Especially is this true with reference to its use in ear diseases, in the treatment of which it is a powerful agent for good or evil.

Among ten of the most prominent authorities on the ear only two give definite information on its proper dosage.

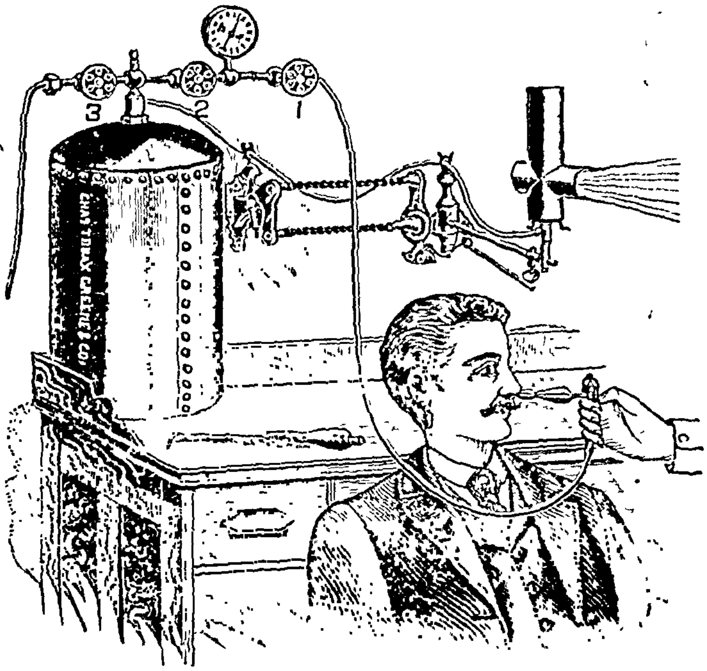
By a series of experiments with the compressed air gauge I have found that the maximum amount of pressure that can be obtained with a Politzer air balloon of the capacity of eight fluid ounces is six pounds; with the six ounce bag the pressure may be made to reach ten or twelve pounds. The difference in favor of the smaller bulb represents the greater advantage one has in grasping a small object. This amount was the maximum obtainable by an unusually strong hand, accustomed for years to compressing air bags handled at the greatest advantage for leverage, that is, with the larger end of the balloon between the thumb and strongest fingers, and the tapering end under the third and fourth, or weakest fingers. As the reverse method is practiced by many aurists, much less force than six and ten pounds must result.

Politzer speaks of ten and twelve ounce bags which are manipulated in Vienna by pressing them against the operator's side, but they are not in our markets. The Gruber balloons, with the opening or air valve at the larger end, might possibly accumulate more force than I have mentioned, by repeatedly compressing them, but on account of the valves being imperfect, or soon becoming useless, I have discontinued their use. Professor Gruber himself prefers the bulb having a perforation in the end to be covered and compressed with the thumb. I have not experimented with this kind, for one could not be found.

The rubber bulb usually supplied by the Davidson company for hand sprays and inflators can be made to exert fifteen or even eighteen pounds, but not by a single compression. However, it is not practicable to employ more than fifteen pounds with the $\frac{3}{16}$ inch rubber tubing ordinarily supplied with Buttle's inflators. A higher pressure distends it, and eighteen pounds ruptures it with a loud report. The thick, firm, white tubes accompanying the De Vilbiss atomizers will stand more, for I have tested them with forty-five pounds without even distending them.

The force necessary to spray the nose and throat is not great. Eight pounds will project continuous sprays of watery solutions or lavoline with sufficient force from the Davidson atomizer. Parenthetically I wish to explain that when I say lavoline I do not mean lanoline, as many journals have made me say. Lavoline is a purified liquid vaseline. About twelve pounds' pressure is needed to produce a continuous and copious lavoline spray from the De Vilbiss atomizer, and it requires thirty or forty pounds to throw a spray of unheated glycerole of tannin.

In adapting the improved compressed air apparatus to the treatment of the ear I have endeavored to devise some means of *determining and controlling* the force and volume of air, or the dosage. To illustrate the necessity for this I may quote one of my assistants as having recently reported a case of rupture of the drumhead by an aurist who was using compressed air *without an air meter to gauge* the amount of force used. The employment of compressed air in otology should be placed on a scientific basis. Guessing won't do. Such a powerful remedy as we have stored in our air reservoirs with a hundred pounds pressure to the square inch should be administered with care, skill and accuracy. It can be demonstrated that this is possible.



As the accompanying illustration will show I have accomplished this by placing a pressure gauge between two valves *on the escape* pipe of the air receiver. This arrangement utilizes the gauge for registering not only the air pressure in the reservoir but also the force of the current of air while it is escaping through the cut-off of the treatment tube.

The whole apparatus used in my experiments, excepting the cut-off, was made by Chas. Truax, Greene & Co., of Chicago. The cut-off used is the Davidson pattern. The only fault in its construction is the violation of the important principle that a right angle should never have a place in a compressed air tube. It is obstructive and should be replaced by a curve.

The meter is used as follows: By opening the outer right hand valve marked 1, by turning the wheel to the left one-fourth of its circumference, pressing the thumb valve of the cut-off and opening valve 2, gradually you may obtain any number of pounds' pressure desired at the cut-off, from one to one hundred. To use ten pounds: with the cut-off and valve 1 open, turn the valve 2 until the index needle runs up to 10. As long as the cut-off remains open the needle indicates 10 pounds. If you close the cut-off the needle rises to indicate the whole number of pounds in the reservoir. Now if you fit a spray producer to the cut-off and open it, the first impulse of the column of air, which is small in volume, is expended in filling the atomizer and starting the spray. In using the nasal bulb of Buttle's inflator for treating the ear, the first impulse is expended in filling the nasal and superior pharyngeal cavities in addition to inflating the middle ear. The volume of air is so small that the needle drops down to 10 at once and remains there as long as the cut-off is kept open. If no more than this amount is desired the cut-off should be opened before the current is turned on and valve No. 2 should be slowly opened until the needle indicates the number of pounds required. No greater pressure will then be exerted unless the cut-off valve is closed.

When it is desired to interrupt the air current for the purpose of producing to and fro movements of the membrana tympani and ossicles, or to throw jets of volatilized medicine or sprays into the tympanic cavity, it is a simple matter to control the pressure in this way. Let us assume that we want to use, with the nasal-tipped inflator I have adapted to this purpose, three atmospheres, or about forty-five pounds. Valve 1 being opened, apply the cut-off to the nasal bulb containing the medicine on sponges; open the cut-off; turn on twenty pounds with wheel 2 and then close cut-off. The needle rises. Now if the inflator is inserted into the nostril with the patient's nose firmly closed and cheeks fully distended, the instant the cut-off is opened, the needle runs down to 20. Close the cut-off, and the needle mounts to 45 pounds. Open the cut-off at that moment and the needle descends again to 20; close the cut-off and the needle rises; the instant it touches the 45 pounds mark, open the cut-off again and so on; repeatedly opening and closing the cut-off will give repeated impulses at any given pressure.

The resistance offered by the sponges is small—less than $\frac{1}{3}$ of an atmosphere.

A little practice will enable anyone to measure the doses skilfully and to give effective treatments without fatigue.

If very rapid interruptions are required, valve 2 should be opened more freely than in the example given. For forty-five pounds' maximum pressure, about thirty pounds should be allowed for the uninterrupted current. My experience with this method indicates that not more than sixty interruptions per minute should be made in order to produce decided vibratory movements of the drum head and ossicles.

The dose of air for ear treatment varies greatly in different individuals. While fifteen pounds might endanger the continuity of an infant's drum head or one greatly weakened by disease, or the thin cicatricial membranes closing old perforations, I have often applied from sixty to ninety pounds to old thickened and hardened drum heads without doing them the kindness of bursting them.

It is evident that if it requires fifty to eighty pounds in some cases to propel sprays into the middle ear it follows that in such instances rubber air bags are insufficient, for they do not average more than six to fifteen pounds. But with high pressure only a small volume should be used. I would propose the following rule to keep the operator within the limits of safety: The higher the pressure the lower the volume should be. If the density of the air is greater than one wishes to use, even with a minute volume, it is easy to avoid the high pressure when using the nasal tipped inflator by leaving the opposite nostril open during the first impulse, until the needle descends to the proper point. This allows the surplus air to escape by the opposite nostril. The same purpose is accomplished with the catheter by holding the catheter tipped inflator a little withdrawn from the mouth of the catheter while the cut-off is first slowly opened. The surplus pressure then escapes at the junction of the inflator and catheter.

The volume should be proportioned to the density with care in cases of atrophied soft palate so as not to strain the muscles of the throat by too powerful inflations, especially if they are subject to rheumatic sore throat.

It serves a convenient purpose to instruct patients to raise one or both hands every time they feel that one or both ears are inflated. This obviates the necessity of frequently using the auscultating tube.

The warnings against the danger of rupturing the membrana tympani by Politzerization have been freely sounded. I do not know that I have ever ruptured a drum head by compressed air, while I have seen a considerable number that were torn or perforated by blows on the ear. Even in men employed in caissons of tunnels, bridges, etc., where they are compelled to work in an atmosphere condensed under a pressure of forty to sixty pounds, it is rare to find a ruptured drum head. This may be owing to the fact that they are instructed to inflate the ears so as to equalize the pressure on both side of the membrane. In this connection it must not be forgotten that there is always the natural atmospheric pressure of nearly fifteen pounds on the outer aspect of the drum. Notwithstanding this an eminent otologist has asserted that drum heads have been lacerated by Politzer's method.

Professor Politzer says: "During thirteen years only fourteen cases of ruptured drum heads are known. In the case of a normal membrana tympani a pressure of forty-five to sixty pounds is required to cause rupture. In treatment, however, we apply only a pressure of about eight pounds." If there were any fear of rupture, it could probably be prevented by firmly pressing the tragus into the external meatus.

As compared with the Valsalvan method the application of medicated nasal-tipped inflators as I have fitted them to the compressed air apparatus makes an effective topical application of various medicaments possible without any active exertion on the part of the patient. In the Valsalvan experiment there is no medication of the middle ears, but simply a mechanical effect of moderate pressure, and a probable congestion resulting from the straining effort. A. Hartman has shown that four to eight pounds pressure by the Valsalvan method is required to bulge forward a healthy drum head. In numerous experiments the pressure averaged from twenty to twenty-six pounds in males, and from fourteen to twenty-two in females. But owing to swelling of the Eustachian tube or contained secretions this experiment often fails.

The unwisdom of advising patients to practice the Valsalvan experiment has often been demonstrated by individuals who have come under my observation with a history of rapid failure of hearing owing to their habit of carrying the aurist's instructions to excess.

Politzer's method is far preferable. He says: "The pressure for the application of my method in practice varies as a rule between fifteen and sixty pounds, which can easily be produced by a compression of a pyriform India rubber bag capable of holding ten to twelve fluid ounces. Only in a few cases is it necessary to apply a greater force."

The six ounce bag is as large as can be conveniently compressed by the hand alone, and the compression of these very large balloons between the hand and knee or side of the surgeon does not seem to fulfil the ideal of an artistic performance.

A decided advantage to both patient and operator in the adaptation of the inflator to the compressed air apparatus lies in the fact that it renders it possible to treat most aural patients without the Eustachian catheter.

The sponges of the inflator may be saturated with solutions of camphor-menthol or other remedies in lavoline, and sprays of these medicines can be propelled through the nose and Eustachian tubes into the middle ears with ease and certainty in the majority of cases. This diminishes the danger of syphilitic infection and of irritation of the Eustachian orifices.

Often gentle pressure will accomplish this. Indeed patients sometimes feel a spray enter the ear from an ordinary hand atomizer, especially when the cheeks are distended. By turning on the current of air gently, and gradually increasing it, the permeability of the tube may be re-established by a weak air pressure more easily than by a sudden forcible current.

In practicing this method I have usually found the results most satisfactory when the patient assisted by inflating the cheeks and keeping the lips firmly closed. At the instant the nasal cavities become filled from the inflator the velum palati and base of the tongue press automatically upward and backward, completely closing the post-nasal space. I have now under treatment a case in which the soft palate is absent through ulceration, but the tongue so thoroughly shuts off the nasal cavities during this experiment that fifty pound's pressure is concentrated on the right middle ear while the left is closed. Nevertheless there are some instances in which the ears are more readily inflated during the act of swallowing.

It has been suggested that these forcible air currents might convey discharges into the mastoid cells, but Dr. Michael has "proved that, especially with the application of strong currents of air, the secretion in the tympani cavity is always propelled into the external meatus and not into the mastoid process."

Occasionally one sees a case in which the current of air from the nasal-tipped inflator fails to open the Eustachian tube. Probably the anterior lip of the orifice of the tube is pressed by the air more firmly than ever against its fellow, closing it like a valve. A case now under treatment resists ninety pounds with the nasal bulb, but fifty pounds pressure carries camphor-menthol and lavoline into his middle ears through the catheter.

Treatment by the catheter is accomplished with the same inflators I have already mentioned, the catheter tip being substituted for the nasal bulb. The sprays are thrown through the catheter in interrupted jets without imparting discomforting movements to the catheter, a feat well nigh impossible in the practice of Politzerization with the air bag fitted with the hard rubber tube which is inserted directly into the catheter, and without any intervening flexible tube, as the custom is in Vienna.

Proper precaution should be taken to prevent dust from entering the air reservoir, although, by the methods I practice all air entering the ears is filtered and medicated.

Finally, these methods make the middle ears nearly as accessible as the nose and throat for treatment with the various volatile remedies and sprays.

70 State Street.

Discussion.

Dr. Richardson stated that he did not wish to doubt Dr. Bishop in his statements made in his paper, but he could not see how it was possible to use a pressure of over forty pounds without causing injury to middle ear and rupture of membrane. He was only explainable from his standpoint by the possible loss of pressure in the passage of the column of air through tubes, sponge, nasal cavity and Eustachian tube until pressure was reduced to that usually obtained by the ordinary method of Politzerization. Four years ago, at the meeting of the American Medical Association, at Newport, he reported several cases of inflammation produced in the middle ear by the use of high pressure in atomization and it was the universal consensus of opinion that such condition often arose, under these circumstances, and instances were cited by several present. Even by the use of the low pressure obtainable by the use of the Politzer bag rupture of membranes did take place and two such cases had occurred in the doctor's practice. Of course these cases were not normal membrane, nor is Dr. Bishop treating normal membranes—a pathological membrane, atrophies here and adhesion there will not stand the pressure of normal membrane. For his part he could not see how the use of such high pressure could be borne by any nose. It seemed to him that it would cause serious lesion to nasal, pharyngeal and tympanic mucous membranes. The use of even low pressure is often attended with great pain, how much more so must be these pressures of 50 to 90 pounds.

Dr. Richards asked Dr. Bishop if the reporting such high pressure, under his authority, might be misunderstood by others, who resorting to these methods, not possessing his skill, cause rupture of membranes and serious lesions of nasal cavities and ears.

Dr. Seiss has only obtained five pounds' pressure from Politzer bag, and has seen rupture of the drum from this force. Regards 12 pounds as the maximum force to be employed in nasal sprays. Thinks a pressure of 50 pounds most dangerous and quite unjustifiable in treatment of Eustachian tubes or nasal mucous membrane.

Dr. De Vilbiss thought that great care must be taken in regulating the pressure. Perhaps Dr. B. had lost more force than he supposed in the transit of the air from reservoir to middle ear.

Dr. Price Brown, Toronto, had not been able to administer sprays of cooling solutions of a stronger air pressure than 12 pounds to the inch without producing hæmorrhage from the nasal mucous membrane. With sprays of albolene and glycolin as a menstruum 15 pounds pressure to the inch could be used and without hæmorrhage, but not a higher pressure.

Dr. Randall said the question was not what pressure was used *at* but *in* the ear. The manometer connected with the external canal was the sole means of determining the pressure actually employed. High pressure air in small volume might penetrate the Eustachian isthmus, but would instantly be reduced by expansion in the tympanic and mastoid cavities. On the outer surface of the drumhead the diver at a depth of 15 feet finds a pressure of 7 to 8 pounds painful, and 10 to 12 pounds hardly bearable. Yet the movement outward of the membrane would be greater and a higher pressure tolerated or relieved by distension.

Dr. Thomas Hubbard, Toledo :—Having conducted some experiments in this line, and having arrived at conclusions that seem to be at such contrast with those of Dr. Bishop, it becomes a duty for me to speak on this subject, since I believe that his statements are positively dangerous, and contrary to actual facts and conditions. For instance: he states that he considers a pressure of 15 pounds safe for inflation of middle ear of an infant. In my experience a pressure of one pound is too great for a child of some years. His range of pressure for the adult is 50 to 90 pounds. This I would divide by ten and yet divide it again by two. My range of pressure is between one and two and one-half pounds for the adult. I am referring to the air pressure gauge in connection with the tube conveying the air to the nostril, and of course mean pounds per square inch.

I would therefore challenge every estimate that he has used in the above statement, and would respectfully refer the doctor to certain facts in the physiology of respiration for proof in part. A strong robust adult can by forced expiratory effort raise the air-pressure in an accurate air-gauge from 3 to 3½ pounds. Therefore, by the Valsalva method we are right in inferring that this is about the maximum pressure obtainable.

Very few persons can tolerate all the pressure that they can bring to bear in this process of self-inflation without pain or rupture of the membrane. Here then, is an indication of the maximum pressure that can be safely used, namely, 3 or 3½ pounds.

The basis of the Politzer method is the fact that the Eustachian orifices are made patulous by the very act of swallowing. The doctor ignores this and consequently must employ much higher pressure than is necessary, although I cannot believe that he gets one-tenth of the pressure that he would lead us to believe.

Dr. Bishop in closing the discussion said: The gentlemen who have participated in this discussion have emphasized the point upon which I have laid special stress, that is the danger in using air from reservoirs under very high pressure without being able to determine the amount of pressure and the volume of air used. In other words, the dosage. It takes these two elements to make up the dose-pressure and volume. That is my apology for calling your attention to this very simple little device pictured in the cuts that are distributed among you. Dr. Hubbard thinks I use a dangerous pressure when I speak of 75 or more pounds. It would be dangerous in the absence of any means of controlling the amount of air used.

Does it make any difference, gentlemen, whether you use a cubic foot of air under high pressure or a cubic inch? Does it make any difference whether you throw a pebble or a rock at a pane of glass? Shall we make no distinction between a high pressure column 1-16 of an inch in diameter and one large enough to constitute a cyclone?

Without this air meter to put both pressure and volume under our entire control I would not advocate the use of high pressure. But with it one can use air from my reservoir which is filled every day with air under 100 pounds pressure to the square inch with as much safety as lies in the low pressure receivers mentioned by Dr. De Vilbiss.

Granting this, which I am prepared to demonstrate, you must concede that the possibilities of breaking up adhesions and anchylosis and overcoming immobility of the ossicles and restoring the sunken drum membrane to its normal position, are greatly increased.

Since it requires 4 to 8 pounds to bulge forward a healthy drum head, many times the pressure is necessary to affect these old thickened, leather-like membranes that have been held retracted by anchylosed ossicles for years. I have often removed such membranes and have found them thick, tough and sometimes gritty from chalky deposits. What effect can you expect to produce on such ears by one pound of pressure on the inner side of the drum head while there is constantly an opposing atmospheric pressure of fifteen pounds to the square inch on the outer side of the drum?

The gentleman at my right speaks of having had inflammation and even rupture of the membrana tympani from the use of Politzer's method. I have had no such experience, but I do not make use of strong inflations in children or in the acute stage of inflammation.

One of the two principal conditions upon which I predicate the safe use of high pressure seems to have been forgotten in the discussion. That is the ability to control the amount or volume of air used at each dose. While I use only the minutest column of air under high pressure, I am able to cut off a dose of this column, or subdivide it, so as to limit it to a fraction of a cubic inch. You can open the valves 1-32 or 1-64 of an inch if you like.

This air meter may be compared to the milliampère meter which makes it possible to obtain therapeutic effects from electricity which would be otherwise impossible or dangerous, because the dosage can be determined and definitely controlled.

MUCHOLD reports a case of Grave's disease in which he removed the posterior half of one of the inferior turbinate bones with the galvano-cautery, with immediate improvement in all the symptoms except the goitre, which was, however, readily reduced by a mild galvanic current. He suggests the possibility of the disease being sometimes due to some reflex disturbance.

SOME OBSERVATIONS UPON EXCISION OF THE MEMBRANA TYMPANI, AND THE TWO LARGEST AUDITORY OSSICLES.

Read before the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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A year ago I read in this Section a paper upon excision of the membrana tympani and the two largest auditory ossicles, in which two sets of indications for the operation were set forth as follows:

1. The deafness, tinnitus and vertigo of chronic catarrhal otitis media, especially when adhesions exist between the membrana tympani and the promontory in the inner tympanic wall, or when there is evidence of synechiæ between the ossicles.

2. This operation is indicated in the suppuration, deafness, tinnitus, vertigo, headache, and recurring earache of otitis media purulenta chronica.

Conclusions regarding the results of the operation in cases of chronic catarrhal otitis media were presented as follows:

1. The operation of excision is attended with no bad results, even if it do no good, and its effects are superior to massage, mobilization, plicotomy, etc., etc., applied to the membrana and the ossicles.

2. The most constant result of the operation is a relief from a sensation of pressure and fulness in the ear.

3. There is generally a more or less prompt, entire and permanent relief of tinnitus and aural vertigo (so-called Ménière's symptoms).

4. The least frequent and permanent result is improvement in hearing. Sometimes, however, this is marked. In some instances the improvement in hearing is maintained after regeneration of the membrana tympani. In those cases of chronic catarrh of the middle ear, in which everything else has been tried without benefit, it would seem rational that the patient should have the chance of improvement offered by this harmless operation, for harmless it certainly has been in all my cases, even if the benefit has been slight or *nil*.[1]

Conclusions regarding the results of the operation of the excision of the membrana tympani and the two largest ossicles, in chronic purulent otitis media.

1. The operation has not failed either to greatly diminish or check the suppuration in all the cases of chronic otorrhœa in which the writer has applied it.

2. In attic cases with normal atrium, the sole perforation being in the membrana flaccida, this operation has shown itself to be the *only* sure means of cure. I would add that in attic cases, with diseased atrium and with perforations, both in the membrana flaccida and membrana tensa, this operation has also effected a radical cure after the disease had defied all other remedies.

3. By this operation in chronic purulent otitis media, especially in cases in which the perforation in the membrana tensa is comparatively small and while the disease is limited to the drum cavity, the

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[1] Since writing this paper, I have been forced to conclude that in many cases of chronic catarrhal otitis media better results can be obtained by the removal of the stapes, as well as the incus. In some of such cases it may be well to let the membrana and malleus remain.

suppuration can be directly reached and treated and drainage improved by the removal of the membrana tympani and malleus, before the purulent disease has attacked the posterior portion of the drum-cavity and the antrum. Thus mastoid inflammation, and necrosis, sinus-thrombosis, pyæmia and cerebral abscess are prevented.

4. If any hearing exists before the operation in purulent cases it invariably improves after the excision of the necrotic membrana and ossicles. Vertigo, headache, tinnitus and the attacks of ear-ache from gatherings, so common in chronic otorrhœa, are entirely and permanently removed. The general health which is nearly always impaired in these cases by a form of mild chronic septicæmia from the chronic purulency in the ear, is always improved by the antiseptic effects of the operation which removes the septic nidus and makes it possible to render the drum cavity entirely aseptic by the improved drainage and direct medication.

I have seen no reason for changing any of these conclusions; on the contrary I am more firmly convinced of the great benefit especially in chronic purulent cases, to be derived from the operation of excision of the necrotic membrana and the diseased malleus and incus. The latter bonelet, however, is readily destroyed by purulency in the drum-cavity and hence, in chronic cases, is rarely found when the operation is performed.

Instruments.—Straight instruments have been found preferable to those set at an angle with the handle. As the operation is one largely performed by fingers the straight instrument is more easily managed by the slightest movement between the fingers. The tactile impressions conveyed through the easily-moved straight instruments are much more definite and useful than those conveyed through the awkward and angular instrument-handles, which have to be managed by hand and wrist to some extent and hence cannot be so delicately manipulated. The incus-knife of the writer, consisting of a short blade set at right angle to the shaft, can be used as both knife and hook with which to pull out the incus after it has been detached, even when it has slipped back out of sight towards the mastoid cavity.

The recumbent position favors the slipping backward of the incus after it is detached from the stapes, and especially if it be already detached from the malleus. Therefore it is much more convenient for the operator to lift the head and shoulders of the patient up as high as the anæsthetic state will permit. This can be done very easily by having the head- and shoulder-portion of the operating table hinged so as to lift it to any angle desired.

I would merely mention here that I have always employed ether in my operations, the illumination of the ear being effected by a six-volt electric head-lamp supported on the forehead.

Teeth.—The teeth should be in good condition before the operation, especially when performed for the relief of the symptoms in a case of chronic aural catarrh. In a case of this kind operated upon last November (1891), and in which iodoform blown into the ear immediately after the operation, and renewed several times soon afterwards, seemed to prevent regeneration and in which the improved hearing and diminution in the tinnitus were maintained, a diseased and painful tooth, apparently caused irritation in the operated ear.

The patient sought the aid of a dentist for relief of toothache in January, two months after the operation. The tooth was extracted roughly, as it appeared to me. Pain in the jaw and throat ensued with ear-ache and suppuration in the ear in which the excision had been performed. During the muco-purulent discharge which ensued, and which was followed at last by regeneration of the membrana, the patient, a woman of thirty-three, showed symptoms of secondary syphilis evidently contracted from her husband. The regeneration of the membrana tympani was not followed, however, by diminution of hearing, nor increase in the tinnitus, which had been measurably diminished by the operation. Though, in this case, the acute inflammation in the ear operated on, may have been induced by the secondary syphilis, bad teeth are competent to act prejudicially in any case of excision of the membrana tympani, and hence, they should be examined and put in good order, before the operation.

Operation on both ears.—In two cases of chronic catarrhal otitis media, one in December, and the other in January last, I excised the membrana tympani and malleus in both ears. In the first case, a woman forty-five years old, operated upon in the Presbyterian Hospital, there was no relief. Regeneration was prevented in both ears by insufflations of iodoform, retained for weeks. In the worse ear there was some reaction upon leaving the hospital and taking cold in January. This was promptly checked by iodoform insufflations and total regeneration prevented. A new membrana formed excepting a small central hole. In the better ear no regeneration has yet occurred, six months after the operation.

In the second case, a woman sixty-five years old, operated upon in the Presbyterian hospital, in January last, both membranæ and mallei were excised without relief. The woman was the subject of great cranial neuralgia and debility from hard work. The operation afforded no relief. Regeneration was prevented in this case by the use of iodoform insufflations. In March of this year, three months after the operation on the ears, the patient left the hospital, without regeneration of the membranæ. She went to work, took cold, and early in May suddenly developed in the worse ear an acute otitis media, with pain and copious discharge. The case has been readmitted to the Presbyterian hospital and is now under observation. Regeneration, at least partial, will ensue. Inflammation occurring in these cases in the worse ear, though months after the operation, would seem to indicate that 1, in all chronic aural catarrh there is an inclination to acute suppurative processes in proportion to the degree of sclerosis, or trophic change; and 2, that this tendency is always likely to be a menace to success of the operation in chronic catarrhal otitis media; 3. The only hope of combating this tendency, so far as my experience extends, lies in the immediate application and prolonged retention of iodoform in the seat of the operation.

In two cases of chronic catarrh of the middle ear, I have recently removed the *malleus and incus* for the relief of deafness and tinnitus. In the first case, a woman thirty-two years old, I removed May 9, 1892, the malleus and incus, and insufflated iodoform, the hearing was improved by the second day for clicking sounds and for the voice. A clicking sound could be heard twenty feet away from the ear operated on, while it was audible about half the distance in the other ear. The voice was heard a foot away in the ear operated upon, and the impact of sound was novel and somewhat disagreeable on this side. Before the operation it was a question whether isolated words were heard in this ear. The tinnitus was not materially lessened. Notwithstanding a severe reaction in the ear on the fifth day after the operation, the improvement in hearing was maintained.

In the second case, a woman twenty-four years old had complained of tinnitus and deafness in both ears, for eighteen months. In the left ear there was considerable ankylosis and tinnitus. The hearing was eighteen inches to two feet for isolated words. Some hypertrophic nasal catarrh. Tinnitus quelled for five minutes in the left ear by using the pneumatic speculum. May 13, 1892, excised the membrana, malleus and incus, and insufflated iodoform. Tinnitus was not entirely quelled by operation. No improvement in hearing the first two days. By the third day tinnitus less and hearing improved. In a week the hearing was eight and ten feet for isolated words. On the ninth day after the operation patient went to church and was able to hear better than she has for over a year. No reaction in this case by the twelfth day, the iodoform was dry in the fundus of the ear and the patient went home to another city well satisfied with the result of the operation.

The improvement in hearing when it occurs as the result of the operation in cases of chronic sclerotic otitis media, is always *progressive*. It would seem from this that the direct transmission of sound to the stapes effected by the removal of the membrana tympani, mobilizes the ossicle in an effectual manner. The passive motion thus conveyed to the stapes gradually overcomes the ankylosis which has been hindering its movements, rendering it consequently more vibratile and responsive to sound-waves. The nerve of hearing too, by the renewed reception of sound impressions thus once more conveyed to it, probably becomes more sensitive to ærial sound waves, its normal stimulus.

Results in chronic purulent otitis media.—In cases of purulent otitis media the results of the operation of excision of the membrana and the malleus are usually eminently satisfactory as shown by the history of the following case: Thomas B., aged 12 years, an intelligent lad, has suffered from chronic otorrhœa and deafness of the left ear for some years. No account of the inception of the disease could be obtained. Examination revealed a uniformly swollen, red, flat and dry membrana tympani, with a large and narrow oval perforation in the anterior inferior quadrant of the membrana very near the periphery. No signs of the malleus could be seen in the flat, even surface of the swollen membrane. Through the perforation a little muco-pus could be seen, and when this was mopped away with cotton on the holder, the granulating inner wall of the tympanic cavity could be seen and made to bleed by a touch from the probe. Hearing for isolated words in the diseased ear was two feet. At times the discharge was copious enough to appear at the meatus.

On April 12, 1892, the lad was etherized and the greatly thickened and diseased membrana with the malleus excised. No trace of the incus could be seen, or felt with probe. The membrana was greatly thickened and tough, and its inner surface was studded with granulations. The inner tympanic wall was also granular; but the hæmorrhage during the operation was comparatively slight for a purulent case, in which as a rule, the hæmorrhage is considerable for so small a field of operation. Iodoform was insufflated and the ear let alone for a day or two, when it was mopped clean with hydrogen dinoxide and more iodoform insufflated.

On April 28, a test of the hearing revealed an ability to hear isolated words eight feet from the ear operated on. There was no discharge. On May 16, another test revealed a hearing distance of twenty feet for isolated words. The inner wall of the tympanic cavity had lost its granulations and had become gray and smooth and there was no discharge. The patient was dismissed from the Presbyterian hospital where he had been operated upon, and resumed his duties in school.

THE OPERATION FOR EXCISION OF THE OSSICULA IN CHRONIC AURAL CATARRH WITH INSTANCE OF A FAILURE.

Read before the Section of Laryngology and Otology, at the forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY H. V. WURDEMANN, M.D.,
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Before taking up the subject matter of my paper I would like it to be distinctly understood that I intend casting no aspersions upon aural operative procedures. My standing upon this subject may perhaps be known.[19] I refer more particularly to excision of the ossicles in chronic suppuration and in chronic aural catarrh. I have had marked success both previous to and since the one disastrous result which forms the nucleus of this paper.

Sexton,[14] Burnett,[4 5 6] Colles[7] and others in this country do not mention any bad results, from the operation occurring in their practice. The latest article[9] that I have seen relating to operative interference in chronic aural catarrh says: "With reference to surgical procedure I can truly say that in no case have I seen a bad result follow any of the operations, either immediately or subsequently, and in nearly all cases there has been a certain amount of improvement either in diminishing the tinnitus or in improving the hearing". Most papers go on in this strain and say that while we can never promise in a given case what the amount of improvement will be, we can promise that the condition will not be aggravated and that the chances for improvement are certainly favorable.[9] This was and is still, my opinion for cases that I accept for operation.

In all the literature of the subject at my command, I can discover but little mention of accidents occurring during or after the operation, and these have all been in suppurative cases. I can find, in only three instances, the admissions of but two operators, of unfavorable results upon the hearing. In 1889 Wetzel[18] reported two cases in which the hearing had been made worse, in the one where the mastoid antrum had been opened during the excision and in the other where the stapes had been interfered with. Yet the latter has occurred in other instances without ill effects and the bonelet has been bodily removed experimentally in animals whose hearing was still preserved.[3]

Reinhard,[11] of Duisborg, in a paper upon Hammer-Amboss-Excision, admits that in only one case in his practice, which however "could not be controlled," was there any malefic effect upon the hearing. In the discussion upon this paper, Schwartze[12] said that neither he nor his associates had, or had heard of a death following the operation and that he had seen no ill effects beyond paralysis of the facialis and vertigo. He claims that the former is the fault of the operator, being produced by injury to the Fallopian canal from the incus hook. This need not happen in operating for proliferous disease as removal of the incus is unnecessary.[15 17] In one case Schwartze[12] had seen vertigo, persisting for over a month, following the operation. I have noticed temporary disturbance of the sense limited to the tongue tip of same side[10] and in a case operated on two months from date of writing, although some relief was experienced from the tinnitus and deafness, there is yet complete absence of this sense in the end of the tongue on operated side. After operation for non-purulent disease suppuration is a common event as shown by reports of others.[5 11] In the year previous to the date of case reported in this paper I had excised the ossicula in six cases[19] and since that time in five more. Four of these have been for non-suppurative inflammation. In only one instance has suppuration followed. I may add that my cases are carefully chosen according to the rules laid down by Burnett[4] and by Sexton.[14]

One year ago a strong healthy man of sixty consulted me about his ears. He complained of deafness, noises in the head and vertigo for which he sought relief. He claimed that the right ear had discharged, many years ago, and since had been totally deaf on that side. For about five years the left ear had been failing until now conversation was carried on with difficulty. Status præsens:—R.E., H.D., loud sounds. Tuning fork of low pitch by aerial conduction. Bone conduction better than on other side. Drum-head retracted with chalk in membrana flaccida. L.E., H.D. Watch p-150, whisper 2 cm., voice 1 ½m. Drum-head retracted and opaque; malleus not freely movable. Eustachian tubes on both sides patulous. Has hypertrophic rhinitis and deviated septum.

I treated the nasal hypertrophy after Bosworth's[2] method and made local applications to the naso-pharynx with marked benefit. Treated the middle ear of both sides by catheter, using camphor iodin and camphor-menthol vapors for three weeks, and followed by the injection of sodium bicarbonate solution for over a week with absolutely no improvement of hearing on either side.

The tinnitus was still about the same, and despairing of improvement by other than surgical means, I suggested an operation. In July following I removed the membrana tympani and malleus under ether anæsthesia. The operation was clean and although several attempts were made to reach the incus it was not obtained. These were made by the incus hook and no reckless gouging was done. Although the anæsthetic was given by a skilled assistant the patient did not take it well, he became cyanotic at times and the progress of the operation had to be delayed. There was excessive vomiting after recovery. When he came to his senses he complained greatly of vertigo. This was ascribed to the after effects of the ether. On testing his hearing on the evening of the second day I found him so deaf as to only understand shouted words, and upon investigating the cause I was surprised to find that he was *totally deaf on the operated side*. No other reaction followed, until five days later, he had pain at night, and on the next morning an acute otitis media set in which ran its course in two weeks. For four weeks after there was an occasional mucous discharge, the tympanum being dry for days together. All this time the operated ear continued stone deaf. The after treatment for the first few days consisted in "letting bad enough alone," and after the acute attack of inflammation set in, was gentle wiping out of the canal by cotton wet with 3 per cent. boric acid solution. After several days of this a little powdered acid was blown in the ear after cleansing. Internally I gave him drop doses of tincture aconite and later pilocarpin, with no appreciable effect from the latter on the hearing. A couple of months later, when the ear seemed quiet, I commenced the use of galvanism with the result of setting up sufficient irritation in the operated ear to cause an acute discharge. This was tried several times and further treatment of that side given up as a hopeless case. During this period I had been treating the other ear by active and prolonged massage, applied both directly to the malleus by a cotton-tipped probe and by Siegel's otoscope. Also continued inflation by the catheter, etc. To our gratification this ear rapidly improved in hearing until after one month's treatment he could hear the voice at 1½ m.

About this time I sent the patient in consultation to Bishop, of Chicago, who treated him for a couple of weeks, with the idea of helping the hearing on the operated side. Dr. Bishop had better luck than I with electrical treatment, and wrote[1] me that the patient could, at the time of writing, hear the upper notes of the scale. This I observed on his return. The patient was obliged to visit New York, and while there, on the advice of Dr. Bishop, consulted an aurist by whom I understand little encouragement was given. He was placed upon specific treatment later, with no results as regards the deaf ear, which since that time has remained in about the same condition. The noises in the head ceased entirely a few days after the operation and have never returned. The loss of these, however, does not make amends for the loss of hearing. Since that time I have succeeded in bringing up his hearing distance on the non-operated side to voice at two meters.

In regard to the probable lesion after the operation I would suggest a hæmorrhage in the labyrinth happening during the anæsthesia or during the excessive vomiting thereafter, with subsequent organization of the blood clot. In respect to the advisability of the operation in this particular case, I would state that hereafter I shall not operate upon patients of his age. In a private communication from Colles,[8] of New York, over this case, he raised this objection and wrote that he did not think that the labyrinth was primarily involved and thought that improvement could be expected after cessation of the suppuration. Subsequent observation has not upheld this opinion. Dr. Colles considered sclerosis an unfavorable symptom. Stacke,[16] of Erfurth, also holds this view. On the other hand Sexton,[14] Burnett[6] and Schwartze[12] consider that the advance of progressive sclerosis may be effectually stopped by the procedure. My experience tends to substantiate the latter statement. Randall[10] and Seiss[13] do not consider the operation advisable in chronic aural catarrh.

One lesson from this case is that our prognosis as to the results of excision of the drum-head and malleus must be guarded and the patient must not have rose colored anticipations of the probable amount of benefit to be derived from the operation.

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[19] Wurdemann, H. V., "The Treatment of Chronic Suppuration in the Middle Ear by removal of Carious Ossicles, Necrosed Bone and other *Obstructions in the Tympanum*," Med. Progress, July, 1891.

Discussion.

Dr. Randall said that the excision was done for two conditions so unrelated, that the suppurative and non-suppurative cases should be decidedly separated in discussion. His experiences in catarrhal cases had not been satisfactory—one of his cases, with no gain in hearing, having gone on to severe suppuration with mastoid empyema, burrowing to the neck and occiput, and life was saved by a hair's breadth. Gelle's test for stapes ankylosis often seemed the criterion in deciding between excision and stapes mobilization. In suppurative cases he was slow to operate, since most of the forty instances of attic disease with Shrapnell perforation, often with superficial cases seen in the last year, as in previous experiences, had improved so rapidly as to admit no question of operation. Done only in the most urgent and severe cases, the excision of the carious ossicles had proved disappointing. No instance of harm had occurred; nor a single brilliant result; the drainage had often not been specially improved as evidenced by the formation of new sinuses. In every case in which he had excised for caries, he regretted that he not done the more radical operation of Stacke, removing, as Walb puts it, the *bony* as well as the membranous outer wall of the tympanum. Thus only can the attic-caries be freely exposed to operative or other treatment. As to the operation in both forms of cases, the German experience was certainly much longer and larger than any on this side of the Atlantic, since Voltolini, Lucae, Hessler and Schwartze had each, probably, double the number of operations of Sexton or any other American.

Macluen Smith, Philadelphia:—Age has not in my hands had any influence in the result of the operation, and yet we must certainly expect better results from the more recent cases.

The youngest case was a child six years of age suppurative in character. The eldest was a gentleman of seventy-two years (non-suppurative) with distressing "menieres symptoms" for twenty-six years. This case was not for sixteen years, able to leave his chair or bed without the assistance of an attendant. This case was operated on left ear three years since, which markedly reduced his symptoms; the right ear was operated on one year ago since which time the patient is entirely relieved of vertigo and tinnitus, with sufficient restoration of hearing to enable him to appreciate most ordinary conversation, with continued improvement of hearing. We must, of course, look for and expect better results from the suppurative cases and I would consider it the surgeon's duty to give his patient the benefit of such surgical procedure, and thus reduce to a minimum the danger of mastoid and cerebral complications by allowing such pathological conditions to continue.

Dr. Richardson stated as this appeared to be an experience meeting he thought it wise for each to give his personal results. He had operated several times in these cases, but most of his work, like that of others present, had been for chronic suppurative cases, rather than the chronic catarrhal. In all he had done ten operations, eight for suppurative and two for non-suppurative catarrh. His six cases have already been reported, the other four are of too recent date to give results. An analysis of cases followed. In concluding he stated that he thought in many cases of disease of the attic, with involvement of the osseous wall and probable implication of the mastoid antrum he would prefer Stacke's operation to the present operation.

Dr. Seiss has not operated in catarrhal cases, and would not at present feel justified in doing so. In suppurative cases regard the operation as a distinct addition to aural surgery. Depends mainly upon mobilization of the ossicles to relieve hopeless sclerotic deafness—a long incision being made posterior to the malleus and traction made on the incudo-stapedial joint. Otherwise, incurable tinnitus may be almost invariably relieved by the speaker's method of freezing the mastoid. Ether, ethyolene, or chloride of ethyl may be used, are free from injurious results, and are most satisfactory in many cases, acting as a cure in a few cases.

Dr. Seth S. Bishop, of Chicago, said:—I have never hesitated to remove the drum head and ossicles when it was necessary to cure suppurative inflammation. But in the class of cases mentioned by Drs. Burnett and Würdemann, my opinion as to our duty is not so clearly defined. I have been loth to operate for several reasons.

In order to collect statistical information on the subject, a year or two ago, through the medium of the medical journals, I invited all American aurists who had performed this operation to communicate to me the outcome of their experience. Such a small number responded, and the results given were so unsatisfactory, that I was forced to the conclusion that either very few had operated, or the results were not of a nature to encourage the operators to report them.

I have opened the drum several hundred times. A number of years ago I reported the results of 30 cases I had operated upon. I had removed either the whole of the drum head or parts of it for the relief of tinnitis aurium and chronic progressive deafness attributable to non-suppurative inflammation. Many cases are benefited to a very satisfactory degree. I met one of those referred to a few days since, an operator on the board of trade, who says now that the operation was a benefit to him.

In another case in which I removed both drum heads, one remained well open, after a partial regeneration of the membrane, for a year and a half with satisfactory results as long as the patient remained under observation. After removing the other drum head there was a slight muco-purulent discharge. While this continued the hearing was much improved. After this discharge ceased the hearing distance diminished. The patient insisted that if the middle ear was kept moist he would hear better. I filled the ear with simple vaseline, and at the expiration of a week the drum head was found reproduced. Other cases were only slightly benefited, and some not at all.

Now it is a reasonable inference that if this opening of the drum head benefits a patient, a complete and permanent removal of it will make the improvement permanent. If the mallet is not removed the drum head will probably be reproduced, and it may be even after the ossicles are extractep. I would suggest the minor operation of removing a section of the membrane as a preliminary test. If this is followed by considerable improvement, then I would resort to the more radical operation. This much can be said in favor of the test operation: the removal of a section of the drum head is not followed by any disastrous consequences.

These observations are all based upon the supposition that the labyrinth is not involved in the disease. Should there be sclerosis, atrophy or paralysis of the auditory nerve, of course an operation to improve hearing is out of the question. But if the only trouble is that sound waves cannot reach the round window and foot plate of the stirrup because of the barrier interposed by the immovable ossicles and membrane, then an operation is a logical and promising procedure.

The case of failure reported by honest Dr. Würdemann, and for which report we owe him our acknowledgements, I have seen several times through his courtesy. A few weeks ago as this case was passing through Chicago, I made an examination and found that the right ear which had been nearly useless to him for many years, had been improving until he could hear loud conversation without the conversation tube. This ear had been treated but not operated upon. The operated ear remained useless for conversation, but he could hear me whistle all the tones except two of the scale from middle C upward one octave, through the tube. He could also repeat after me nearly all of the vowel sounds. The discharge had nearly ceased.

I may add, however, that nearly a duplicate of this case has recently come under my observation. Before the operation the patient said he heard his watch 2½ inches. A New York aurist removed the drum head, mallet and part of the anvil. The tinnitis was not relieved. He is totally deaf and has a purulent discharge from the ear.

Such cases are discouraging. In my opinion we should perform this operation only in such cases as I have described, after a preliminary test opening of the drum head, and giving the patient the benefit of any reasonable doubt.

Dr. Burnett said:—An accident following incision of the membrana and the auditory ossicula, was largely, if not entirely due to rough manipulation. Disturbances in taste after the operation is evanescent. When it has been disturbed in chronic suppuration before the operation, the sense of taste has improved after the operation.

Gelle's test for ankylosis of the stapes is not necessary in chronic catarrh if any hearing is present, as hearing would prove that the stapes is not entirely ankylosed. Even if ankylosis of stapes were to exist, this should not prohibit the operation of excision in aural vertigo and severe tinnitus. Stacke's operation, or Arbuthnot Lane's operation is a mastoid operation and not to be compared with excision of the membrana and ossicles in attic suppuration. If excision is performed promptly in attic suppuration there would be much less need for mastoid operations.

Dr. Würdemann, of Milwaukee, in closing the discussion:—Young men, as a rule, are apt to take up these new operations which are so highly advocated. I presume that I am no exception to the rule, but in regard to these chronic suppurative cases with necrosis of the ossicles coming to me (generally they are "rounders") I am disposed, after cleansing and antiseptic treatment has been tried, to urge an operation. Gentlemen, I get tired of treating these cases after a few weeks. In chronic aural catarrh I believe we should be conservative and choose our cases. My experience in non-suppurative disease is limited to four cases. In one total deafness followed the operation, as reported in this paper. In the second, a negative result; in the third, the tinnitus and deafness were markedly relieved, and in the fourth the results are not yet fully developed. In this last case I have been obliged to do two secondary operations on account of regeneration of the drum-head again diminishing the hearing.

SPASTIC CONTRACTION OF TENSOR TYMPANI MUSCLE.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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The purpose of this paper is to present, in as concise a manner as possible, a case of objective noise in the head. Objective noises in the ears are of uncommon occurrence, as only a small number of cases have been reported. The sound usually produced is said to resemble the snapping of the finger nails, or the sudden drawing apart of the finger ends when slightly moistened with saliva or a tenacious fluid (Burnett).

The case which I present was under observation many months, during which time it was the subject of considerable study, and of curiosity, to many of my colleagues.

Belton Adair, a young half-breed Chinese boy, 16 years of age, was referred to me by Dr. H. A. Robbins. His parentage is interesting. The father was one of the first Chinamen ever brought to the Atlantic Coast. He came over with Admiral Perry, and was said to have been quite a botanist. Settling in the South, he made the acquaintance of a poorly educated German woman whom he afterwards married, and who became the mother of three of his children, the subject of the present paper being the eldest. The father died young and his medical history is unknown. The mother is excessively deaf, communication with her being almost impossible. The boy is said to have possessed the usual physical development and activity of the average American youth of his age, until about his fourteenth year. Mentally he was said to be very precocious. He passed through the ordinary diseases of childhood, from which he made good and complete recoveries. At this period it was noticed that he had a peculiarity in walking, a slight uncertainty, but as this was considered to be a racial peculiarity not much attention was given it. During the spring of his fourteenth year the aural trouble, which makes him the subject of the present paper, developed. His guardian attributes his affliction to the habit the American children had of stuffing his ears with snow. The first phenomenon noticed was an intermitting roar which, after several months' duration, was followed by the "ticking," which continued without abatement until he fell under my observation. This noise was not only subjective, but was distinctly audible to one when coming in close contact with the patient's head. His guardian told me that her attention was first attracted to this unusual noise on a certain Sunday while at prayers in church, when the boy's head was resting against her own. During the prayers she heard the ticking, and supposing it to be a watch which the boy must have secreted, she demanded of him where he had obtained it, when he replied that it was that awful noise in his head. The ticking existed in both ears, but was always more persistent, continuous and irregular in the right than in the left ear. It was never absent in both ears simultaneously. It would frequently subside in one or the other ear for a few moments, hours or days; but never in both ears at the same interval. There was a want in rhythm in the same ear at all times, and absolutely none between the two ears. The right ear was far more regular in its click, if I might so call it, and I have noticed frequently that at different visits and at different intervals on the same day it would register the same number of beats to the minute. The left ear was markedly irregular—it might register one beat in one minute, thirty at the next, five during the third minute, and during the fourth remain absolutely quiet. Applying an otoscope to each ear of the patient connected with each ear of the observer, the following points were observed: The clicking in each ear was entirely independent of the other, they seldom or never pulsated synchronously, the clicking in the right ear was always more rapid and therefore more to the minute than that in the left ear, and lastly, it was noticed that they were not synchronous with the heart's action. The sound heard through the otoscope was the characteristic muscular click which attends the contraction of all muscles when in motion. This sound can be heard by the application of a stethoscope to any muscle while it is brought into active contraction, well heard over the masseter. I never heard the sound unaided by the otoscope. I never brought my head in close enough contact with that of the patient. Perhaps I was a little more scrupulous than scientific. I have no reason to doubt the observations of others on this point, as the first motion the poor sufferer made on being brought to me was the bending of his head forward in order that I might hear the sound within his head. At the time he fell under my observation, July, 1888, in his sixteenth year, he was evidently a great sufferer. The sounds in his head had existed for nearly two years without interruption. He was deprived of sleep and was almost unable to carry on a continued train of thought, on account of the distraction due to the incessant ticking. Lately, his guardian tells me, he had given up his books, as he found it impossible to study. For several years past he would frequently be noticed striking his head with his closed fists or against surrounding objects, so as to cause a cessation of the noise. Since this affection of his auditory apparatus he had lost a great deal of his brightness, mental vigor and clearness of intellect. His physical condition was not as satisfactory as it had been six years ago. He was of the average height, with a Mongolian cast of features, body well nourished, limbs very thin. In walking there was a marked unsteadiness of gait, a want of coördination, and a tendency to fall "all in a heap" in coming in contact with even slight obstacles. There was a certain amount of "lallying" in speaking and his ideas were very crude, causing one to doubt of his ever having showed any particular brilliancy of intellect. Memory was said to be fairly good.

Examination of Ears.—In this description, as both ears presented practically the same changes, it will not be necessary to designate right and left.

Auditory canal large, roomy and nearly straight, so that membrane could be readily viewed without aid of speculum.

Membranes normal in color, but dull; no opacities, cicatrices, atrophic spots or deposits. No light reflex, marked contraction, so that manubrium was directed almost vertically inwards, the umbo resting upon promontory. Short process very prominent. Siegle's otoscope demonstrated normal mobility of anterior and posterior segments of membrane; the manubrium remaining motionless. Careful ocular inspection, made many times and for prolonged periods, while sound was very distressing to patient, failed even to reveal the slightest movement in the m. t. or parts thereof. Eustachian tubes slightly contracted. On inflation air entered cavities freely, but with slight increase in pitch of sound. During inflation the anterior and posterior segments of membrane would bulge out, though manubrium would seem to be motionless. If manubrium showed any movement it was so slight as hardly to be noticed. The membrane would almost immediately assume its usual position after inflation, the injection along manubrium and upper pole being the only evidence of an inflation having been made.

The patient was to a certain degree unreliable in the testing of the hearing, but from frequent examination and under varying surroundings, I concluded that hearing was practically normal for the acumeter, loud and whispered voice. Bone conduction normal.

Nasal and pharyngeal cavities were normal. There was no catarrhal inflammation of these cavities, nor was there any evidence of there ever having been any. Supposing that these muscular sounds might possibly be due to movements of the palati or constrictor muscles, I made frequent and prolonged examination of the oral and nasal pharynx without ever having observed the slightest quiver or twitch in these muscles; although through the intervention of the otoscope there was an incessant tapping going on in patient's ear. He became so skilled in rhinoscopic examination that he would allow the mirror to remain within the pharynx for many minutes without contracting soft palate or showing other evidence of tiring. It was also observed that neither of the processes of deglutition or phonation had the slightest influence on the frequency or rhythm of the muscular click. It was interesting to observe the influence exerted over the ticking,by the use of inflation through the medium of the catheter. The catheter being introduced, connection having been made with the patient's ear through the medium of the otoscope, the ticking progressing as usual, several inflations were then made, when it was noted that there was a momentary cessation of the clicking, followed by several short, sharp clicks and then a pause. This pause was only for a few moments, when the ticking would again return with its original intensity, unless the inflations were persisted in. After each inflation the reaction became weaker and the pauses greater, so that after several energetic efforts the silence became assured for several minutes or hours. Allowing the catheter to remain in the mouth of tube, without resorting to inflation, had no influence over sounds. During a prolonged course of treatment the ears progressively but slowly improved, under this form of inflation, until the clicking entirely subsided.

The muscular clicking having ceased after being under my care for a period of about six months, the patient passed from under my observation.

The subsequent history of patient under the care of Dr. H. A. Robbins, was that of a slowly progressing case of pachymeningitis.

The patient died February 21, 1891. The autopsy was made by Dr. I. W. Blackburn, pathologist to the United States Government Insane Asylum, in the presence of Drs. R. T. Edes and H. A. Robbins. Dr. Edes took notes. Unfortunately, I was not aware of the boy's death until some weeks after the occurrence

Autopsy.—Belton Adair, æt. 18, ten hours after death. Sutures visible externally as well as internally. Skull separated at apex of lambdoidal suture. Skull cap rather thicker than normal; although possibly softer than normal. Dura not unusually adherent. Slight delicate, filmy membrane adherent to dura along vertex on right side. Nearly the whole of the vertex of the inner surface, on left side, was covered by a thick, bulky false membrane, thicker in the center, thinning out toward the periphery, occasioned by a hæmorrhagic effusion. This membrane could be separated with considerable ease from the dura. Extreme œdema and opacity of pia. Convolutions shrunken over anterior and superior regions. Pia firmly adherent to cortex, separation only being attended with tearing away of cortical substance—this throughout. Difficult to say whether fluid was in subdural space or in subarachnoid—probably latter. Convolutions hard, with shrinkage more marked over superior portions. Ventricles contained a little more fluid than normal. Lining of fourth ventricle granular. Cribriform appearance very marked above anterior perforated space.

The most important point in connection with a case of clonic muscular ticking heard within the ear is to locate the particular muscle or group of muscles which is occasioning the peculiar sound heard. Few cases of this character fall under the observation of any individual observer, and therefore it is impossible almost to lay down differential points. We can only, reasoning from physiological functions, surmise what would take place in case of involvement of one muscle and what would occur were another affected. In this case the possibility of the involvement of other muscles than the muscles of the middle ear can be excluded, and for the following reason, viz.: the sound produced was clear and sharp, entirely different from that heard during the involuntary contraction of the constrictor or palati muscles. In case of palati and constrictor contractions there is visible movement in soft palate and pharynx. There was none noticed here. In contraction of pharyngeal muscles the patient is as much annoyed by the muscular twitching in the throat as by the noise in ears. The patient never once referred to any sensation in pharynx of this character. Deglutition would necessarily influence sounds were the pharyngeal group of muscles at fault.

Examination of patient some three months after cessation of spasm of muscles revealed the membranes less rigidly contracted, and the manubrium responding slightly to the use of Siegle's otoscope. The action of inflation would seem also to establish the implication of this muscle. The cessation of the clicking after many forced inflations, evidently due to the over-stretching of the tensor tendon, which would become for the time being unresponsive to centric irritation. The absence of visible movement in membrane proves nothing, as the vibrations produced by contractions of this muscle would be so slight as to be hardly recognized by the unaided eye. Monometric study would have been of value here, and its want of use was an act of negligence on my part. I had thought of dividing the tendon of these muscles, and tried to gain the consent of guardian, but it was of no avail. Had either of these observations been carried out the history of the case would have been complete.

The pathology of the spastic contraction in the present case seems to be one of centric origin, the lesion being probably at the seat of origin of the nerve supplying the tensor, or lesions involving the nerve in its passage through the cranial cavity. Individual nerves supplying individual muscles, nerves supplying groups of muscles, nerves of general sensation and nerves of special sense, were involved at progressive stages in the life history of this case, until the individual, shortly before death, became a motionless, sensationless and senseless mass of humanity. The cause of the contraction in the tensor, as in several other groups of muscles, must have been due to primary centric irritation. The cessation of ticking was more due to the destruction of the function of the nerve than to the treatment instituted by me.

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Discussion.

Dr. Randall said that he was able to cause voluntarily such a clicking sound in the ears, synchronous with palatal contractions, yet not wholly caused by them, since at times unilateral and independent. The sound is audible to outsiders, and seems to consist of a fine dry click as well as the moist separation of the Eustachian walls.

Dr. Lewis H. Taylor, Wilkes Barre, Pa.: I have notes of a similar case which I have always intended publishing, but as yet have never done so. The patient was a young woman of 25, in fairly good health, who came to me about three years ago on account of excessively annoying sounds in her ear, which were subjective and objective as well.

By placing my ear near hers, say 2 inches away, the sounds were distinctly audible, while with the tube in her ear and mine they were quite loud. They were of the nature of a constant ticking, regular and unvarying. She came for treatment, which I am sorry to say did no good, and I soon lost sight of the patient.

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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(*Continued from page 472.*)

Case 6.—Treated by Frank Allport, of Minneapolis, Minn. C. B., Male, age thirty-five. Entered City Hospital December 7, 1888. I saw the case December 10, at the request of Prof. Dunn.

At the date of his admission he was obviously very sick and his mental condition was such as to render a thorough knowledge of his previous condition impossible. We learned, however, that his left ear had discharged for about three months, accompanied by severe head pains. He has had a diarrhœa and chills; his tongue was dry and coated; he was delirious, and had aphasia and incoherent speech; no paralysis; the auditory canal was full of pus; there were no mastoid symptoms; there was a swelling just under the mastoid process in the neck, about the size of a hen's egg, that was somewhat tender, but not fluctuating; the surface of his body was very hot and dry; his temperature varied from 102½ to 103½, and his pulse was from 104 to 120. He died December 11.

Autopsy by Professors Dunn, Jones and myself. The large vessels of the dura and pia-mater were filled with dark blood; the inferior surface of the cerebellum is softened, discolored and purulent; the basilar artery and circle of Willis are filled with dark venous blood; the middle and internal ear contained foul thick pus; there is a purulent thrombus in the left petrosal sinus, both superior and inferior; there is a purulent thrombus in the lateral sinus and in the internal jugular vein; the external jugular vein for some distance down the neck shows evidences of purulent phlebitis; the vein from the auditory canal is in the same condition; pus is found in the semi-circular canals; there is a thrombus in the basilar vein; the superficial posterior auricular glands were found to be much enlarged; there was no pus in the mastoid cells.

Case 7.—Archives of Otology, 1885. Treated by A. Hedinger, of Stuttgart. Female, age sixty-three. Right ear. Came to Hedinger in 1874, with a history of chronic otorrhœa. Fibrous tumor in meatus; numbness right side of neck and face; patient disappeared for years; came again in 1883; severe pain in ear; aural hæmorrhages intermixed with pus; totally deaf in right ear; fibrous tumor still present; pain in back of head and temporal region; swelling of temporal region; moderate fever.

April 23. Temporal swelling incised and pus liberated; improvement. May 17. Incision in the cheek is made and pus liberated. June 19. Another incision over mastoid muscle and pus liberated. Oct. 30. Painful swelling over posterior part of mastoid process. Mastoid opened and pus liberated. Nov. 8. Delirium; right pupil contracted. Nov. 12. Stupor. Nov. 15. Total unconsciousness; spasms of left upper and lower extremities; left facial paresis. Nov. 17. Death.

Autopsy.—Multiple pus sinuses in the neck; carious spots on outside of mastoid and occipital bones; congestion of dura-mater and pia-mater; the right sigmoid sinus, bulbous portion of jugular vein, and the mastoid emissory vein, all obliterated; tumor in middle ear; malleus and incus gone; pus in mastoid antrum; a carious canal leads from the mastoid antrum into a cavity in the sigmoid fossa; carious opening through the incisura santorini; caries of the pyramid; caries of the bony wall of transverse sinus.

Case 8.—Archives of Otology, 1885. Treated by A. Hedinger, of Stuttgart. Female, age fifty. Chronic otorrhœa, both ears. Vertigo, violent pain in the head, especially in occipital region. Temperature and pulse subnormal. Right ear contains polypus: removed. Left ear, chronic otorrhœa, simple. Received conservative treatment from Hedinger. Treatment unavailing; coma; death.

Autopsy.—Intense hyperæmia of all meningeal veins. In the center of the superior petrosal sinus is a small carious opening directly over the vestibule. Petrous bone carious. Pus in middle cranial fossa running into the canal of the medulla oblongata. Abscess in left posterior cranial fossa where cerebellum rests. Cholesteatoma in left mastoid antrum. Caries of semi-circular canal, vestibule and cochlea.

Case 9.—Archives of Otology, June, 1886. Treated by A. Truckenbrod. Male, age twenty-eight. Left ear, chronic otorrhœa. Has suffered from attacks of vertigo; has now chills; very painful spot on top of head; meatus narrowed; headaches; temperature rises moderately. Mastoid opened; found pus; improvement for a few days. Temperature rises again; pain in top of head and temple; paresis of right side of face; difficult speech; defective memory; aphasia. Diagnosis. Brain abscess.

Operation.—Fistula found in squamous bone directly above the meatus, which was enlarged. Search made for pus, which was found. Irrigation with sublimate solution 1–1,000. Sublimate gauze dressing; drainage tube; recovery.

The abscess was in the second left temporal convolution. The diagnosis was based on, 1. Oedema of this region; 2. Pain in this region; 3. Paralysis of right facial nerve.

Case 10.—Lancet, 1885, Vol. 2, page 665. Left ear. Treated by Hide Hilles. Chronic otorrhœa. Death.

Autopsy.—Cerebral meningitis. Abscess of left temporal lobe.

Case 11.—Lancet, May 15, 1880. Treated by James Allen. Female, age nineteen; right ear; chronic otorrhœa; deafness. Dec. 18, 1879. Ear-ache; entire head painful; vomiting; paraplegic; motor paralysis of lower limbs; scalp and spine very painful to touch. Death.

Autopsy.—Abscess beneath dura-mater on anterior surface of right petrous bone. Drum-head and ossicles destroyed. Pus in middle ear, mastoid cells, and labyrinth. Vertebræ in portions of cervical and dorsal spine carious. Pia-mater congested.

Case 12.—Gazette des Hopit., No. 67, 1880. Treated by C. Miot, Paris. Male, age thirty-five. Tubercular. Chronic otorrhœa. Right facial paralysis. Painful mastoid. Death.

Autopsy.—Pus in middle ear and mastoid cells; ossicles gone; caries of tympanic walls; dura-mater red, thickened and softened. Facial nerve and chorda-tympani largely destroyed.

Case 13.—Journal of Anatomy and Physiology, Vol.

[illegible]

XIV. Treated by P. McBride and Alex. Bruce. Right ear. Chronic otorrhœa. Death.

Autopsy.—Pus in middle ear, mastoid cells, vestibule and cochlea. Abscess in outer half of right cerebral hemisphere, adherent to the posterior surface of the petrous bone, in the vicinity of the internal auditory nerve. Dura-mater detached at this point.

Case 14.—Archives of Otology, July, 1879. Treated by C. J. Kipp. Male, age twenty-three. Right ear; chronic otorrhœa. Acute exacerbation. Pain over right side of head. No mastoid tenderness. Meatus red; chills; fever; vomiting; headache; both optic nerves congested; convulsions; unconsciousness; bowels regular; coma; death.

Autopsy.—Longitudinal sinus filled with blood. Abscess in temporal lobe; not encapsulated; on removing the lateral sinus, puriform fluid escaped, which was found to come out of a round opening in the anterior and outer wall of the sinus. A large thrombus existed in the sinus. Pus in middle ear and mastoid cells. Drum-head perforated. Malleus and incus carious.

Case 15.—American Otological Society, July 25, 1882. Treated by A. Mathewson, of Brooklyn. Male, eleven years; chronic otorrhœa; mastoiditis; apparently cured; recurrence; convulsions. Death.

Autopsy.—Abscess of cerebellum. Pus between dura-mater and tegmen-tympani.

Case 16.—American Otological Society, July 25, 1882. Treated by C. S. Merrill, of Albany. Male, age 32; acute otitis. Death.

Autopsy.—Pus over the region of the petrous bone, extending from the tympanic cavity through two or three small openings in the tegmen-tympani.

Case 17.—American Journal of Medical Sciences, May, 1892. Treated by G. W. Prentiss. Male, age 31. Right ear; chronic otorrhœa: earache and headache; chills; fever; high temperature; pain in the temporal region and over right eye; mastoid unaffected. Death.

Autopsy.—Abscess in anterior lobe of left hemisphere of cerebellum. Marked discoloration of the dura-mater covering the petrous portion of the temporal bone. Caries of petrous bone at this point. Lateral sinus filled with clotted blood. Purulent opening through the walls of lateral sinus communicated with the abscess.

Case 18.—American Journal of Otology, July, 1882. Treated by Mr. Field, of England. Male, age 42. Chronic otorrhœa; left ear. Death.

Autopsy.—Congestion of dura-mater. Puro-lymph in meshes of pia-mater over the left sphenoidal lobe. Abscess in left lobe of the cerebellum. The temporal bone was considerably necrosed with yellowish and greenish discolorations on the walls of the tympanum. Middle ear full of pus. Drum-head gone.

Case 19.—Philadelphia Medical Times, August 27, 1891. Treated by G. C. Harlan. Female, age 14. Left ear; chronic otorrhœa; left facial paralysis. Death.

Autopsy.—Meningitis. Abscess of the left lobe of the cerebellum. Almost entire destruction of the anterior wall of the ex. meatus. Drum-head gone. Caries of middle ear.

Case 20.—Edinburg Medical Journal, June 1881. Treated by Robert Sinclair. Male, age 22; right ear; Chronic otorrhœa; took cold; unconscious; maniacal; right pupil contracted; mastoid swelling. Wildes' incision. No relief. Death.

Autopsy.—Abscess having a direct communication with the middle ear, in tempero-sphenoidal lobe.

Case 21.—Australian Medical Journal, April 15, 1881. Treated by Robertson. Male, age 39; left ear; total deafness; no previous history; purulent discharge from ear; left facial paralysis. Death.

Autopsy.—Caries in middle ear. Abscess in left middle crus-cerebelli, extending partly into the cerebellum itself, and inwards into the pons abutting on the fourth ventricle and pressing on the seventh nerve.

Case 22.—New York Medical and Surgical Brief, February, 1879. Treated by W. Oliver Moore. Male, age 50. Right ear; chronic otorrhœa; acute exacerbation; swollen mastoid; abscess opened; vomiting; semi-consciousness and facial paralysis; divergent strabismus. Pupils contracted. Death.

Autopsy.—Caries extending backward and upward from the mastoid portion as far as the parieto-occipital suture. There was an opening through this suture leading into cavity of the skull on a level with the lateral sinus. The sinus was empty and felt like a fibrous cord. A probe passed through it was arrested just where the lateral sinus joins the jugular vein. Meninges very much congested. Pus in the posterior fossa between dura-mater and skull. Caries at this point. Abscess in right lobe of cerebellum.

Case 23.—Glasgow Medical and Surgical Journal, January, 1880. Treated by Thomas Barr. Male, age 17; left ear; chronic otorrhœa; pain, especially in left side of forehead; lanquid and drowsy; vomiting; aphasia; epilepsy.

Autopsy.—The left sphenoidal lobe was found adherent to the bone beneath. Abscess in left sphenoidal lobe. Petrous bone carious in two places. One through roof of the tympanum; the other in the groove for the lateral sinus. The last one communicated with the mastoid cells.

Case 24.—Journal of Anatomy and Physiology, April, 1888. Treated by P. McBride and Alexander Bruce. Female; chronic otorrhœa; death.

Autopsy.—Abscess in cerebellum, right lobe.

Case 25.—Gazette Hopitaux, No. 39, 1885. Treated by Jaccoud. Right ear; tubercular case; sudden pain and deafness; profuse discharge; vomiting and dizziness; mastoid painful; fever; death.

Autopsy.—Pus at base of middle lobe of cerebrum. Tympanic cavity purulent, granular and carious. Drum-head destroyed.

Case 26.—Von Langenbeck's Archives, Vol. 28, page 556. Treated by T. H. Gluck. Right ear; chronic otorrhœa; aural hæmorrhages; headache; fainting; convulsions; amaurosis; soporous condition; facial paralysis; paralysis of right arm.

Operation.—Posterior wall of meatus chiselled away, also a portion of the mastoid. The dura-mater was exposed, and appeared fluctuating. Pus found between dura and pia-maters. Death.

Autopsy.—Purulent degeneration of the dura mater, especially from the longitudinal sinus to the base of the brain.

(*To be continued*)

THIOCAMF presents a ready way of using sulphur dioxide as a disinfectant. He says a combination of camphor and sulphurous acid presents the germ-destroying agent in a very concentrated and convenient form.

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SATURDAY, OCTOBER 22, 1892.

AMŒBIC DYSENTERY.

The clinical term dysentery includes various forms of intestinal flux due to inflammation and usually ulceration of the large intestine. While the primary etiological agents in the acute catarrhal and the diphtheritic forms of dysentery are as yet but imperfectly understood. The so-called tropical variety of dysentery has been made the subject of investigations that show it to be a distinct disease from an etiological, a clinical, as well as an anatomical standpoint. The investigations of LOSCH in Russia, of KARTULIS in Egypt, of COUNCILMAN and LAFLEUR as well as others in this country and elsewhere, show the amœba coli (LOSCH) of dysenteræ (COUNCILMAN and LAFLEUR) to be constantly present in the evacuations and in the intestinal lesions of tropical dysentery as well as in the quite frequent secondary liver abscesses and in the sputum after the rupture of such purulent collections into the lung. KARTULIS and HLAVA have made successful injections into the large intestine of cats and dogs with pure amœbic cultures on straw infusion or with dysenteric stools. The amœba is a unicellar, neucleated, proto-plasmic and vacuolated organism, capable of amœboid movements, showing usually a clear outer zone or ectosare and a granular and vacuolated inner zone or endosare; it varies in diameter from 10-30 or more micro-millimeters, and is very easily demonstrated in the warm stools of tropical or amœbic dysentery the diagnosis of which practically rests upon the detection of the amœba in the discharges. The excellent clinical and anatomical studies of COUNCILMAN and LAFLEUR (*Johns Hopkins Hospital Reports*, vol. ii, 1891), based upon a thorough review of the literature and the analysis of 15 cases of the disease occurring mostly in OSLER'S wards, showed that amœbic dysentery has a variable onset, course and duration with intermissions and exacerbations, tending always to chronicity and early anæmia; that abscess of the liver with or without lung involvement is a frequent complication; that anatomically the ulcers differ from those of other forms of dysentery, being produced by a primary submucous infiltration and subsequent necrosis of the mucous membrane, and consequently they present very distinctly undermined edges; in these ulcers as well as in the liver abscesses purulent inflammation is absent unless a secondary infection with bacteria should occur. As is well known, tropical dysentery is very common in tropical and subtropical countries where it frequently occurs in epidemics, but it also appears throughout Europe and North America. MUSSER has demonstrated the disease in Philadelphia and HEKTOEN not long ago exhibited before the Chicago Medical Society specimens of the intestine with microscopical preparations, from a typical case occurring in a young man who died in Chicago, after having contracted the disease in Galveston, Texas. Comparison of the specimens of dysenteric intestine in the Army Medical Museum at Washington, gathered during the War of the Rebellion by the industrious and able WOODWARD, with the intestine of the amœbic dysentery of to-day show the lesions to be in many instances exactly alike. The natural habitat of the amœba dysenteræ has not yet been found, but it is thought that drinking water is one of the sources of infection.

SUTURE OF THE SPINAL CORD.

In an able paper read before the American Surgical Association in 1891, PROFESSOR J. WILLIAM WHITE reviewed the subject of the surgery of the spine, and made a very complete survey of the reported cases of operative measures employed to relieve the consequences of spinal traumatism. Of the thirty-six cases of laminectomy performed in the post-antiseptic period, fourteen, or thirty-nine per cent., died; but he concluded that the results in general were encouraging for the advantage of surgical interference, except in those cases in which there was disorganization of the cord.

Of course, in all cases of spinal traumatism, more or less injury to the cord ensues; and the influence of operative interference on the degenerative process in those cases in which there is no injury to the vertebræ, is a matter of great surgical importance, including as it does, the questions of early or late operations, and of a more important factor, the desirability of operating on the cord itself.

In 1852 PROFESSOR BROWN-SEQUARD published the results of his experiments, showing that a more or less complete regeneration of the continuity of the various tracts in the spinal cord followed hemisection of the cord at various levels. The cords removed from the animals experimented upon, were examined by FOLLIN, LEBERT, LABOULBENE and

Robin, who found reunion of the severed portions with a new production of cells and fibres. In the past year similar experiments were performed by Fr. Sgobbo, who was unable to obtain regeneration of the cord in any subject of his experiments except the triton; he used also, lizards, tadpoles, frogs, pigeons and dogs. Histological examination showed, however, in all of the animals examined, that notwithstanding the degenerative processes in the gray and white substances of the cord the epithelial cells of the central canal remained intact or were in a fair condition for regeneration. The embryonic origin of the cord being from this epithelium, and the new cord in the triton arising from it also, we must look for some intrinsic cause for the failure of the nervous elements to proliferate and unite. Pathologically this cause seems to be the rapid formation of connective tissue and its interposition between the severed ends.

Such a result often follows traumatic section of a nerve; and exsection of the fibrous band with coaptation of the freshened ends has resulted in restoration of the integrity of the nerve.

This has probably induced surgeons to ask themselves if the same result could not be accomplished in cases of old injury to the spinal cord. Dr. R. T. Morris published in 1886 the history of a case of traumatic paraplegia, on which he operated in 1885 with the intention of excising the damaged portion of the cord and suturing the ends together. On exposing the cord he found the injured tract so extensive that exsection was out of the question.

Chipault has recently brought this matter forward again, in an interesting paper on the surgery of the spinal cord in the *Revue de Chirurgie* for August. He considers such an operation to be impossible anatomically. He states that in the cadavers of three persons who had vertebral fracture, in two of which there was complete section of the cord, the retraction of the medullary segments and the extent of the sclerosis necessitated a resection of several centimeters; and the loss of elasticity of the cord as well as the resistance of the ligaments formed by the pia mater, prevented the apposition of the resected ends. If the cord has been simply divided by a cutting instrument it may be sutured in the cadaver, and without doubt in the living subject, by fine silk sutures passed through the pia mater.

It is possible that some of the questions involved in suturing the spinal cord may be determined by experiments upon animals. But Morris's experience in finding an extensively degenerated tract that precludes exsection, would probably be paralleled by most surgeons operating on old spinal injuries with a similar end in view. For various experimenters, in testing the elongation of the cord by suspension of the cadaver, found that the lengthening varied from eight to twelve millimeters (five to eight-sixteenths of an inch), while several centimeters may be diseased. So it would be manifestly impossible to co-aptate the ends after excision of so long a portion of the cord; nor would this probably be facilitated by the proposed excision of a vertebra. It is evidently better to operate early in such cases of spinal injury as indicate osseous or sanguineous pressure on the cord, thus lessening the risks of fibrous degeneration and consequently eliminating the question of excision and suture.

THE ENCOURAGEMENT OF HIGHER MEDICAL EDUCATION BY PHYSICIANS.

There is a sentiment among many physicians that a thorough preliminary education, equal to the bachelors' degree in science or arts, is unnecessary and even undesirable for the young medical student. Students are frequently advised by their preceptors to discontinue their literary and scientific education to begin the study of medicine in the office of the doctor. To such advice medical educators sometimes add the weight of their too eager opinion. But the unbiased and thoughtful educator will always encourage thorough literary training. The country is so much more prosperous that the number of college graduates has increased two hundred per cent. or more since the war, and there is reason to believe that our medical school can soon have a class, the majority of whose members have received liberal educations. Let no preceptor advise the young aspirant for a medical career to discontinue his college course short of its completion.

In another manner the preceptor is often a great sinner against the best interests of the student and the profession. He gives a certificate of study where there has been no study. Every preceptor's certificate should show the number of hours spent in recitations and quizzes, the subjects studied and the facilities for study. The writer deprecates the ruling of the Illinois State Board of Health allowing one year's study under a preceptor to count as one year of time on a four year course. If such study is of any value, its value is derived from the association with a high minded physician, from experience in the management of patients and patients' families, and from clinical study of suitable cases. All of these advantages are better secured during the long vacations or by study with a preceptor after the medical studies in the college are nearly finished. Now the preceptor's certificate is generally a fraud. It should never be given and should never be received. It needs no other evidence of its fraudulent character than the fact that students frequently possess themselves of two such certificates from two honorable physicians, covering the same time, and in one instance a student fortified himself with four, though he had all the time been engaged in an incompatible vocation.

The best service the practitioner and preceptor can do medical education to-day, is to encourage the highest standard of preliminary education, insist on the four years of attendance at the medical school, supplement the training of the medical school with adequate opportunity for obstetrical practice and practice in medicine, and surgical diagnosis, and instruction in medical ethics both by precept and example.

SKIN-GRAFTING FROM THE DOG.

At Bellevue Hospital, New York, the integument of a black and tan dog was used to repair an extensive injury to the scalp. The patient, a woman, sustained an accident in December, 1890, which has rendered necessary six grafting treatments. In the preceding operations, human grafts had been employed, the skin having been taken from the legs and arms of her husband and her friends. These have been only partially effective, an unhealed surface at the top and back of head nearly six by nine inches having resisted the former implantations. The most recent attempt was the use of a canine graft, a procedure that has seldom been used in this country, although it has in certain sections of Europe been quite frequently tried. In this Bellevue case, both the woman and the dog were anæsthetized, and the dog was killed after the removal of the graft.

AN ALLIANCE OF QUACKS

The bone-setters of France have formed a defensive alliance with the magnetic healers, mediums, *masseurs* and others of that class, their object being to organize a national league "to protect and advance their professional interests." In a recent manifesto complaint is made that there is a tendency towards an "undue and unauthorized legislative interference" and a claim is made that it is the inalienable right of all men to heal themselves, or get treatment wherever and from whomsoever they may elect. They therefore propose to make themselves felt in the elections; the specious cry of "fair play" will be put into active use early and late, and it will not be surprising to learn that they secure a semblance of legality.

Having been asked to undertake a research at the expense of the Government of his Highness, the Nyzam of Hyderabad, India, with the object, if possible, of reconciling the conflicting views concerning the action of chloroform, I am anxious to receive from American physicians and surgeons records of any cases where it was noticed that the heart stopped beating *before* respiration, or respiration stopped *before* the heart. Notes concerning any such cases will be considered strictly confidential, provided the reporter states his desire that his name shall not be mentioned in the report of the research when it is finished. Otherwise due credit will be given for any information received.

H. A. Hare,
Jefferson Medical College, Philadelphia.

Chamber of Commerce Cholera Report, New York.—We have received a copy of the report on cholera made by the Advisory Medical Council of the above named body. The report is signed by Drs. Stephen Smith, Chairman, Abram Jacobi, E. G. Janeway, T. M. Prudden, R. H. Derby, Hermann Biggs and Allen M. Hamilton. These gentlemen were selected to fill the honorary positions on this Council, by a special committee of the Chamber of Commerce, early in September, and their report was handed in on the 21st of that month.

The report is worthy of reproduction here in its entirety, but we propose now to quote only a paragraph relative to a short detention of persons at quarantine stations. The Council reports as follows: "We believe that under ordinary conditions the period of quarantine detention of healthy persons when removed, as they should be at once on their arrival in port, from all known or possible sources of infection, and properly placed, should be five days in case no cholera occurs among them." This paragraph, with others of a like tenor in the report, indicates that a more enlightened and humane spirit will in the future direct the form and duration of that imprisonment of innocent persons that is called "quarantine." Detention cannot be, and will not be, abandoned, but it will be planned and maintained with less of panic and heartlessness than has been the case in the past.

It is interesting to note that among the members forming this honorary Council there are several who only a short time before made their exit from the New York City Board of Health, because of the peculiar methods of the latter towards its medical officers. Not to name them all again we would say that we refer to Drs. Stephen Smith, Jacobi and Janeway. They were allowed to quit the Board with some sneering remarks about "having feathered their nests" and other similar reflections (see the letter published in this Journal, August 6). Only a few weeks roll away. and with cholera at our doors, we see the great Chamber at once calling to its aid these selfsame leaders and authorities in preventive medicine. And we see these representative medical men responding promptly and effectively, and thereby illustrating the time-honored adage, "*Miseris succurrere didici.*"

It may be expedient in a later issue to publish the entire report.

BOOK REVIEWS.

Atlas of Clinical Medicine. By Byron Bramwell, M.D., Assistant Physician to the Edinburgh Royal Infirmary, etc. Vol. ii. Part 1. Edinburgh: T. and A. Constable, University Press.

The first part of the second volume of this valuable work has just been issued. It maintains the high standard so characteristic of the excellent professional work that Dr. Bramwell is accustomed to do, and which is so familiar to the medical profession.

The subjects treated of in this number are: 1. Scrofula; 2. Unilateral hypertrophy of the skull; 3. Measles; 4. Two cases of Friedreich's ataxia, in which the knee-jerks are not lost. 5. Alterations in the fields of vision, their clinical significance and importance. Illustrative cases: Permanent hemianopsia due to a destructive lesion of the half-vision centre. Temporary hemianopsia due to an irritative lesion of the half-vision centre.

The plates are: Two ofscrofula; two of unilateral hypertrophy of the skull. Measles. Perimeter charts showing alterations in the fields, both for white and for colors, in cases of hemianopsia. Naked eye appearance of the brain in two cases of lesion of the half-vision centre. A series of transverse vertical sections through the brain in a case of lesion of the half-vision centre.

With this part are also issued: Perimeter charts, showing the fields, both for white and for colors, in cases of central amblyopia (? tobacco amblyopia) and lead poisoning. Secondary syphilis.

All of the illustrations are more than ordinarily well executed. It is to be desired that the work be so well supported as to ensure continuance of its publication, whilst it maintains its present high standard.

MISCELLANY.

TRI-STATE MEDICAL SOCIETY OF GEORGIA, ALABAMA AND TENNESSEE will meet in Chattanooga, Tenn., Tuesday, Wednesday and Thursday, October 25, 26 and 27. The following papers will be presented:

1. Eye Symptoms in General Disease, J. L. Minor, Memphis, Tenn.
2. Talipes Equino-varus (with presentation of patients), C. W. Barrier, Rome, Ga.
3. Sequences of Otitis Media Purulenta, T. Hilliard Wood, Nashville, Tenn.
4. Report of 1,050 Strabismus (Cross Eye) Operations, with some Observations on the Same, A. W. Calhoun, Atlanta, Ga.
5. Hypertrophic Rhinitis, Gilbert I. Cullen, Cincinnati, O.
6. Croupous Rhinitis, with Report of Cases, J. W. Long, Randleman, N. C.
7. Special *vs.* General Practice in Medicine, W. J. Killen, Birmingham, Ala.
8. The Present Status of Medical Education in the South, Luther B. Grandy, Atlanta, Ga.
9. Synovitis, J. B. Cowan, Tullahoma, Tenn.
10. A Clinical Study of the Relations between Scarlet Fever and Diphtheria, W. D. Hoyt, Rome, Ga.
11. Pharmaceutical Preparations of the Present Day, John C. LeGrand, Anniston, Ala.
12. Comparative Value of Proprietary and Pharmaceutical Preparations, Harry Wise, Ph.G., Chattanooga, Tenn.
13. The Treatment of Inguinal Hernia, J. W. Handly, Nashville, Tenn.
14. Surgery—Things to Do and Things not to Do, Willis F. Westmoreland, Atlanta, Ga.
15. Treatment of Indolent Buboes. W. B. Rogers, Memphis, Tenn.
16. The Prepuce: Its Uses and Its Dangers, Erasmus T. Camp, Gadsden, Ala.
17. Stricture of the Male Urethra: Its Diagnosis and Treatment, W. L. Gahagan, Chattanooga, Tenn.
18. A case of Injury to Some of the Cervical Vertebræ Combined with Transverse Fracture of the Occipital Bone, R. H. Hays, Union Springs, Ala.
19. Report of a Case of Rupture of the Abdominal Muscles During Normal Labor, J. W. Hallum, Carrollton, Ga.
20. Report of a Case of Intestinal Obstruction, J. F. Huey, Birmingham, Ala.
21. A Few Selected Cases in Laparotomy, W. H. Wathen, Louisville, Ky.
22. The After-treatment of Abdominal Operations, W. E. B. Davis, Birmingham, Ala.
23. Hepatic Abscess, E. B. Ward, Selma, Ala.
24. Report of Treatment of Sterility, J. M. Head, Zebulon, Ga.
25. Extra-uterine Pregnancy, Richard Douglass, Nashville, Tenn.
26. A Case of Imperforate Hymen, Andrew Boyd, Scottsboro, Ala.
27. Puerperal Eclampsia, with Report of Cases Treated with Nitro-Glycerine, R. M. Harbin, Calhoun, Ga.
28. Erythema, Henry Wm. Blanc, Sewanee, Tenn.
29. Epithelioma; Some Experience, M. B. Hutchins, Atlanta, Ga.
30. Drunkenness and Its Gold Cure (?), John P. Stewart, Attalla, Ala.
31. Summer Diarrhœa of Children, G. T. Prince, Whiteside, Tenn.
32. Advanced Theories in Psychical Science, John E. Purdon, Cullman, Ala,
33. Dysentery and the Most Successful Ways of Treating It, D. H. Baker, Gadsden, Ala.
34. Diagnosis of Fevers, J. A. Long, Cleveland, Tenn.
35. Cholera and the New York Episode, Joseph Holt, New Orleans, La.

MEETING OF INTERNATIONAL MEDICAL CONGRESS (American Public Health Association), in the City of Mexico, November 29th and 30th and December 1st and 2nd, 1892. For the convenience of delegates, and all physicians with their families, who desire to attend this meeting, an elegant Pullman car will leave Chicago November 19th. Short stops will be made at all points of interest between Chicago and the City of Mexico. For further information, maps, time tables, etc., address John E. Ennis, D. P. A., Mo. Pac. Ry., 199 Clark street, Chicago, Ill.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from October 8, 1892, to October 14, 1892.

Capt. Henry P. Birmingham, Asst. Surgeon U. S. A., is granted leave of absence for one month.

Major Daniel G. Caldwell, Surgeon U. S. A., is granted leave of absence for fifteen days.

By direction of the Acting Secretary of War, Par. 3, S. O. 199, A. G. O., August 24, 1892, is revoked, and Capt. Louis M. Maus, Asst. Surgeon U. S. A., is relieved from duty at Ft. Apache, A. T., and will report in person without delay to the commanding officer, Whipple Bks, Ariz., for duty at that station.

First Lieut. Isaac P. Ware, Asst. Surgeon U. S. A., is relieved from duty at Ft. Logan, Col., and will proceed without delay to Ft. Supply, Ind. Ter., and report in person to the commanding officer of that post for duty.

Major Robert H. White, Surgeon U. S. A., is relieved from duty at Ft. Myer, Va., to take effect on the expiration of the leave of absence granted him, and will then proceed to report in person to the commanding officer, Jefferson Bks., Mo., for duty.

Major Daniel G. Caldwell, Surgeon U. S. A., is relieved from duty at Jefferson Bks., Mo., and will report in person to the commanding officer, Madison Bks., N. Y., for duty at that post.

Capt. William C. Gorgas, Asst. Surgeon U. S. A., is relieved from duty at Ft. Barrancas, Fla., and will report in person to the commanding officer, Ft. Reno, Oklahoma Ter., for duty at that post, relieving Capt. John L. Phillips, Asst. Surgeon. Capt. Phillips, on being relieved by Capt. Gorgas, will report in person to the commanding officer, Ft. Myer, Va., for duty at that post.

Capt. Henry L. Turrill, Asst. Surgeon U. S. A., is relieved from duty at Madison Bks., N. Y., to take effect on the expiration of his present leave of absence, and will report in person to the commanding officer, Ft. Riley, Kan., for duty at that post, relieving Major John Van R. Hoff, Surgeon U. S. A. Major Hoff, on being relieved by Capt. Turrill, will report in person to the commanding officer, Ft. Columbus, N. Y., relieving Major Johnson V. D. Middleton, Surgeon U. S. A. Major Middleton, on being relieved by Major Hoff, will report in person to the commanding officer of the Presidio of San Francisco, Cal., for duty at that post.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending October 8, 1892.

Asst. Surgeon R. M. Kennedy, from the training ship "Richmond," and to the coast survey str. "Bache."

Medical Inspector T. C. Walton, ordered to the Naval Academy.

Medical Director B. H. Kidder, from the Naval Academy, and to the naval station at Port Royal, S. C.

P. A. Surgeon W. F. Arnold, from the naval station at Port Royal, and to the U. S. S. "Richmond."

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ORIGINAL ARTICLES.

SAWS AND THEIR APPLICATION IN NASAL SURGERY.

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY ALLEN DEVILBISS, M.D.,
OF TOLEDO, OHIO.

Woakes used small saws, and Siler recommended them for the removal of bone tissue in the nose. Bosworth reported a series of 166 operations of deformities of the nasal septum, with a saw of his own device and since that time they have been used almost exclusively to any other.

It is the best instrument for removing small bony projections that I have used, yet there is trouble in using it where the septum is deflected and a broad surface to be removed.

In these cases soon after we commence sawing, the spaces between the teeth fill up, the saw will fail to cut rapidly, and we are compelled to use pressure, clean the teeth or change saws.

I have also had cases where it was impossible to enter the saw far enough, either below or above, to have stroke sufficient to do any satisfactory work toward the removal of the parts, also in operations which require a larger access to the nasal passages than the natural ones for the removal of tumors from the cavities or naso-pharynx, which require incisions of bone to be made for their removal.

Some years ago I had quite a series of the above class of cases and with the instruments I could command at that time my success was not as satisfactory as I wished for.

It was this that led me to undertake to try to devise a saw so constructed that I could use its extreme end for cutting purposes, attacking the tumor directly in front.

I have been endeavoring to produce such a device ever since, sometimes thinking I had succeeded, at other times failed, but to-day I take pleasure in showing you the instrument that is the result of my prolonged effort, which has not only proven satisfactory to myself but to others.

You will see by examination that it is not much thicker than the ordinary saw and that its edges are protected by steel shields so that it may come in contact with soft parts and not injure them. Being so narrow that they pass into the slot the saw cuts. It can be used in connection with or without grooved director. If the operator uses the director he should place it above the portion that is to be separated from the septum, then pass the shield of the saw along its narrow groove, thus directing it through the surfaces to be cut with precision and certainty. I have seen cases where the grooved director could not be passed above the part. In these cases a hole can be bored through with a twist drill connected to the cable used to run the saw, so that it will do its work quickly. The grooved director can be passed through the opening thus made and the saw used as before described. This is not necessary, as a rule, in hands that have practiced the use of the saw with a view of studying direction.

The shield must be kept in the groove of the director and the cutting end of the saw parallel to a line that would correspond to the side of a normal septum.

The distance which the saw is to be carried into the nasal passages can be determined by measuring first with a probe, the distance from the anterior part of the nose to the posterior surface of the part to be removed, then place this measurement on the saw. This is not necessary to one accustomed to its use as the sense of touch will tell us when it is through. In this way we remove the part much more quickly and with less pain to the patient, and the plane of the part left will be straighter than it could possibly have been made with the ordinary saw used, which is liable to leave an uneven surface.

Bosworth, in his book on diseases of the nose and throat, page 304, makes the following statement in operations for fractured septum with thickening: "Objection has been made to these operations that they result in ulceration. Now, I wish to say, in as positive a manner as possible, that in no case have I had any such result. The subsequent treatment is nothing. The healing process requires no attention. The parts heal up kindly, and, as a rule, with no unpleasant symptoms during the process. It has been charged that bad cicatrices result. Again, I say that I have seen no such result in any case. The mucous membrane re-forms over the cut surface and at the end of two months it would be difficult to recognize the fact that any cutting had been done. Too much importance cannot be laid on the necessity of a perfectly straight, smooth-cut surface. In one or two instances in operating I bent my saw, which is exceedingly flexible, in such a way as to make a hollow cut, sawing in a curve, as it were, leaving a depression on the surface of the septum. Whenever I have made such a mistake there has been exceedingly great annoyance from delayed healing, owing to the fact that mucus and bloody pus accumulated in the depression and formed crusts, and thus markedly interfered with the healing process. And herein, it seems to me, lies an objection to the rougher operation of the gouge and the forceps in removing these obstructions, as leaving an irregular surface for the lodgment of mucus and secretions. We meet with no ulcerations in the nasal cavity, except as a result of syphilis or some blood-poisoning.

"Delayed healing may occur, but not ulceration, after the operation, and delayed healing, I am positive can only be the result of unskillful operating.' Thus Dr. Bosworth testifies to the value of the plane surface.

Knowledge alone is an excellent thing, but knowledge and skill combined are what are necessary for the proper use of any instrument. Whatever saw we may use we must, by seeing, get our starting point and direction, then follow that course even though our light may be shut out. This skill cannot be acquired without patient practice; it need not be on the dead or living human subject because as long as we have butcher shops, material will be abundant. In order to distend the nasal opening for these operations or any otherpurpose, I have devised a nasal speculum which is self retaining if properly introduced. They are made out of steel piano wire and accomodate themselves to almost any form or size of opening without any material increase or decrease of pressure, because of a spiral spring arranged in connection with two rings which hold the nose sufficiently open. This is an advantage as it does not cause the patient pain by unnecessary stretching of the parts and therefore may remain as long as is needed. If it does not sufficiently open the nose for illumination another one may be placed with one ring against the septum the other one against the wing of the nose and neither one be in the way of the operator, whether they are used for explorative or operative purposes. I scarcely ever find it necessary to use more than one, and when I use but one in connection with the saw I always place one ring in the roof and the other in the floor of the vestibule of the nose, thereby making an oblong opening, the long side of which corresponds to the side of the saw and the narrow to its edge, which gives a chance to move the point of the instrument up or down in case the part to be sawed off is so wide as to make this movement necessary.

It will be observed in my paper that I have confined myself exclusively to septal thickenings with or without deflection, at the same time I may be permitted in conclusion to observe that this instrument may be effectively used in any of the various procedures in internal nasal surgery.

TREPHINING FOR MASTOID ABSCESS; WITH NOTES OF THIRTY-TWO CASES OPERATED ON AMONG 3,400 PATIENTS SEEN IN 1889, 1890 AND 1891.

Read before the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich, June, 1892.

BY B. ALEX. RANDALL, M.A., M.D.,
PROF. OF OTOLOGY, UNIV. OF PENN. AND PHILADELPHIA POLYCLINIC.

It is natural that otology should have shared in the general advance of surgery, and that there should be increasing resort to surgical measures in all aural cases where experience has shown that all milder measures are slow or inefficient. How far we will be justified in operative interference in the lines where other measures can often succeed, if persistently employed, or where failure would mean nothing very serious to the patient, are questions which we can leave to the gradual growth of experience. But there is a large and growing group of conditions where we have less free choice. There are cases where not a pound or even a ton of belated cure will avail; where the indications for operation may appear once only accompanied by conditions favorable to success, and in failing to take advantage of that opportunity we may seriously or fatally betray the confidence which has been bestowed in us as medical men. The indications of such conditions are not fully defined, and each case, in some measure, must be judged by itself; but certain principles have been fairly demonstrated anatomically and clinically, and their application in practice must be considered conscientiously by every man who assumes or retains charge of an aural case. The surgical enthusiasm of some men for special operations, or for operating in general, may need to be discounted; yet the fact remains that timidity does not constitute caution, nor is inaction always masterly and conservative.

One of the directions in which surgical intervention is generally called for, and sometimes most imperatively, is the matter of suppurative involvement of the mastoid portion of the temporal bone. Here we have a tract more or less prone to suffer from tympanic inflammation, surrounded by most important structures, and by its anatomical relations liable to have its lesions serious not only in threatening the hearing and other functions, but even imperiling the life.

I believe that there are many who have had such an experience as my own, and many more to whom the same is soon to come; and to these, these notes may have something of help. During the earlier years of my aural work few cases came to view in which questions of life and death seemed to press upon me for a prompt decision. Cases of mastoid empyema were rare and less surely recognized, the indications for operation were ill-defined, and I preferred to drift, congratulating myself upon my "masterly inaction" if the case came through safely, and laying no blame upon my timid conservatism if I failed, especially if I had done the daring deed of cutting down upon the bone, and rested content to proceed no farther. Having never seen a mastoid formally trephined in life, nor done it more than very rarely on the cadaver, its dangers and uncertainties seemed far more evident than its benefits; and cautious consultants restrained me when inclined to proceed at all boldly. Nor indeed, looking back, can I blame myself for more than one or two fatal sins of omission, and those with a saving question whether timely operation would have changed the result. With increased experience, widened practice and the epidemic of "la grippe," I could no longer hold such a position. The cases have multiplied around me in which the question of operation pressed, and there were many where the urgency could not be evaded. In the past fifteen months nearly forty cases of fluctuating swelling or other evidence of mastoid inflammation have aroused my solicitude; and while some have offered no alternative but immediate operation, many have been first vigorously treated with antiphlogistic measures and have fallen into three groups, where either resolution was secured, where operation had to be done later. or where the diagnosis cleared up and a mere superficial glandular abscess was found to constitute the true condition. Simple incision through the soft tissues has sufficed in a group of cases to secure fairly prompt and satisfactory results, no serious necrosis of the bone being found to demand further intervention. Yet there have been at least fifteen cases where it has been necessary to attack the bone, and it is to such that I would especially ask your attention now. The following table gives in brief notes of the thirty-two cases operated on in the three years of 1889—1891:

TABULAR STATEMENT OF MASTOID OPERATIONS DURING 1889-91.

1	1.19.89	E. 721	Mary Price	aged 41	left	Sinus to antrum	Cured.
2	2.8	E	Albert Warner	“ 8	left	Abscess evacuated	“
3	3.16	C. 4	John Brennan	“ 2	right	Facial palsy; seques.	“
4	4.9	E. 817	John H. Rodgers	“ 38		Abscess evacuated	“
5	5.31	E. 876	Mary Deborah	“ 2		“ “	“
6	6.19	C. 66	Ada M. Emory	“ 5m		“ A.	“
7	8.24	C. 99	Theresa Cohen	“ 15m	right	Sinus and sequestrum	
8	1.20.90	P. 263	Horace Anderson	“ 8	left	Sinus to antrum	Recurred.
9	1.23	P. 294	Robert McClain	“ 3	left	Abscess; seques. later	Cured.
10	6.9	P. 430	Wm. McDermott	“ 73	left		“
11	6.17	P. 443	John Maloney	“ 8m	right		Died.
12	6.28	C	Helen Reese	“ 8	left	Sequestra	Improved.
13	9.5	E. 1375	Helen McCleary	“ 8		Abscess evacuated	Cured.
14	9.16	E. 1388	Sarah E. Ward	“ 3		“ “	“
15	11.8	Pr. 155	Cora Ralston	“ 10	right	Sinus and sequestra	“
16	11.10	C. 326	Joseph Barr	“ 2	both	Facial palsy; seques.	“
17	12.30	C	David Rowland	“ 2	right	Hemiplegia and convul.	“
18	1. 2.91	C	Sadie Seidler	“ 4	left	Abscess and sequestra	“
19	4.16	C. 49	Wm. H. Hanerford	“ 3m		Abscess evacuated	“
20	4.16	C. 38	Wm. Devinney	“ 12	right	Abscess and sinus	“
21	4.30	U. 549	Rebecca Mundy	“ 21	right	Abscess and necrosis	“
22	5.28	C. 68	Charles Dougherty	“ 4	left	Sinus to antrum	“
23	5.30	Pr. 202	Wm. S. Loper	“ 30	left	Exostosis, epilepsy	Died.
24	7.11	U. 628	John Haslan	“ 41	right	Abscess and caries	Cured.
25	7.24	U. 634	Richard McGee	“ 6	right	Old sinus and seques.	“
26	7.28	Pr. 267	Adele Sterr	“ 7	right	Sinus and sequestra	“
27	8.15	U. 649	Ellen Barnes	“ 45	left	Abscess into digast.	“
28	8 16	U. 659	Josephine Swanlund	“ 10	right	Abscess and caries	“
29	8.18	P. 912	Euphemia Robinson	“ 11	left	Abscess and sinus	“
30	8.20	P. 863	Joseph McCulloch	“ 11	right	Abscess and sequest.	“
31	9.15	Pr. 152	Horace Anderson	“ 9	left	Recurrent abscess	“
32	12.30	C. 211	Charles G. Wade	“ 10m	left	Abscess and sequestr.	“

Reviewing the work of the past three years, among upwards of a hundred cases, in which pain, swelling and other symptoms strongly threatened empyema or caries of the mastoid, I find records of thirty-two mastoid operations in which I attacked the bone. The mastoid cases constituted nearly 4 per cent. of the 3,400 new cases seen in this period, and about 1 per cent. were operated upon. A group of doubtful and imperfect records, which I have been unable to verify, ought to slightly lengthen the list; and in another series of cases mastoid suppuration or caries was attacked with curette or chisel through the auditory canal, after the method of Wolff; but neither group is here considered. Previously, in my seven years of service at the Episcopal Hospital and three years at the Children's, an additional series of cases was operated on, as to which I have not taken time to search out the scattered notes. During the first five months of 1892, I may mention, in passing, that I have had ten more operations, so my experience, though small compared to the hundreds of operations of Schwartze or J. Orne Greene, has still given me upwards of fifty operations. Only four deaths are known to have occurred in this series of operations, while ten or more have been noted among the others not operated upon, and this latter list but partially reveals the truth as to the fatality of the affection. In but one instance, that reported to the Am. Otolog. Soc. (Trans. 1891, p. 93), can I ascribe any blame to the operation for hastening death. Yet I am far from enthusiastic as to the harmlessness and urgency of the operation, nor should I be understood as arguing that every other aurist ought to have a similar series of operative cases among the same number of ear-patients.

There are several lessons which have been borne in upon me by these experiences, which promise to be of aid in my future work, and may be of help to others. First, of course, that operation is not always necessary unless the presence of pus is reasonably certain. Vigorous hot fomentations, aided by hot douching of the ear, may secure resolution in most threatening cases, and bring about a cure more speedily, safely and completely than any other method. Second, that pus should be freely evacuated as soon as discovered, and the search for it not limited to the external surface of the mastoid, but that its burrowing in many other directions must be borne in mind, and every reasonable means employed to discover its lurking places. Third, that it is a mistake to incise and evacuate pus collections without an anæsthetic to facilitate thorough exploration. In many cases it may be a real saving of suffering to the patient to avoid the discomfort of ether, yet it is so easy to stay the hand too soon, and leave undone work which is urgently required. General anæsthesia, with its freedom of procedure, is usually requisite. Fourth, that our object should be to remove the pathological condition present to the fullest possible extent, not resting content with the mere securing of drainage. Drilling or otherwise draining the mastoid cells may, therefore, be but a halfway measure and leave the patient to a long and tedious further process of caries and sequestrum formation, exposed for months to renewal of the serious symptoms which may have been abated, rather than relieved. Fifth, that the anatomical and pathological variations which may be present are so great that it is rarely possible to predict what will be met, and that full knowledge must be possessed of the anatomy of the part, the most cautious study by sight and finger and probe must be continually exercised, and the radical removal of all suspected tissue, bony or soft, must be done in all directions in which this is safe, leaving as little as may be to subsequent exfoliation. Sixth, that in the after-treatment the minimum of interference is desirable, the ample external wound being closed by sutures, with little packing, and all subsequent irrigations are to be regarded as undesirable and avoided as far as possible. The duration of after-treatment is in exactly inverse proportion to the thoroughness and success of the primary operation.

IT is suggested, and very wisely, that the stewardesses of our ocean passenger steamships should be trained nurses. In case of sickness they would be more efficient, and they would, from their previous training, be more likely to keep the rooms sweet and wholesome.

OBSERVATION OF A CASE OF PURULENT OTITIS MEDIA, CEREBELLAR ABSCESS AND DEATH IN THREE WEEKS.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY C. H. BURNETT, M.D.,

OF PHILADELPHIA, PA.

The patient was a little girl 5½ years old. She was attacked with acute otitis media January 24, 1892, and allowed by the family physician, a homœopathic one, to suffer a week without paracentesis of the membrane. At the end of that time spontaneous rupture occurred and muco-pus flowed from the meatus. The child, however, drooped and complained of headache, though she was free from earache. Gradually, by the end of the second week, the patient showed well-marked symptoms of cerebral abscess, and at the end of the third week the case was abandoned by the irregular practitioner and other consultants were called in. I recognized the condition of the patient when I was summoned to see her on February 10, 1892.

At my suggestion, Dr. Wm. W. Keen was called in with a view to his trephining for relief of the cerebral abscess. The precise position of the latter could not be located. Dr. Keen first opened the mastoid cavity, finding it filled with cheesy pus. He then made an inch trephine opening, the centre-pin being placed 1¼ inch above and behind the external auditory meatus. Exploration of the anterior and middle fossæ of the skull failed to reveal pus in either fossa. A grooved director passed into the temporo-sphenoidal lobe also failed to discover pus. The child recovered well from the ether, but gradually sank and died eleven hours after the operation. Post-mortem examination thirty-six hours later revealed an abscess in the right hemisphere (side of affected ear), containing 2 fluid ozs. of odorless pus.

Straight instruments have been found preferable to those set at an angle with the handle. The patient should be lifted as high as is safe in the anæsthetic state, which can be effected by having the head and shoulder piece of the operating table hinged. The teeth should be in a good condition before the operation of excision is performed.

In two cases of chronic catarrhal otitis media I have operated on both ears, with fair results, considering the degree of the deafness and sclerosis.

In a case of chronic purulent otitis media, in a boy 12 years old, excision of the swollen and granulating membrana tympani, with the malleus, was followed by cessation of discharge and an improvement in the hearing for isolated words, from 2 feet to 20 feet.

EARLY DIAGNOSES OF MASTOID DISEASE AND OPERATION AS A LIFE SAVING MEASURE, IN THE PREVENTION OF PYÆMIC AND MENINGITIC COMPLICATIONS.

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, held in Detroit, Mich., June. 1892.

BY D. MILTON GREENE, M.D.,

OF GRAND RAPIDS, MICH.

[ABSTRACT.]

Five cases of suppuration in the mastoid cells following acute suppurative otitis media, without external signs of mastoid disease.

No pain referred to mastoid. Acute pain lasting until perforation of membrana tympani.

Temperature in four cases reached 104 or above, and in one only 102, before operation.

Operation in four cases with recovery. No operation in one, which resulted in perforation, pyæmia and death.

Early diagnosis made in latter case.

Autopsy.

Pain, redness, swelling and œdema over mastoid, not essentially signs of suppuration in cells.

Opened lateral sinus in one case with no bad effect.

ABSTRACT AND REMARKS ON A CASE OF THE SO-CALLED BEZOLD VARIETY OF MASTOIDITIS; MASTOTOMY; CRANIOTOMY; DEATH.

AUTOPSY: ABSCESS IN TEMPORAL LOBE AND CEREBELLAR HEMISPHERE; THROMBO-PHLEBITIS ON BOTH SIDES.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY HERMAN KNAPP, M.D.,

OF NEW YORK.

Mr. President:—My paper contains a detailed description of one of the most important and instructive cases of my aural practice. It is, however, too long to be read before this Society. I, therefore, would beg permission to read only a résumé of it, and some general remarks, which I offer for publication in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, if acceptable, whereas I intend to publish the case in full in *The Archives of Otology* (July number, 1892).

If we recapitulate the history of the case, we find a young woman of good constitution, suffering during the course of a year from repeated attacks of acute naso-pharyngeal catarrh, extending into both ears. The left ear recovered. The fourth and later attacks showed implications of the right mastoid with marked meningitic irritation. She was pregnant; during the last months the attacks were more severe. The upper part of the sterno-mastoid become red, swollen, and painful; ten days after her confinement her physician made a deep incision into the swollen head of the muscle, liberating a good deal of pus. The relief being only temporary, I opened the mastoid from base to tip, found pus in the upper part, and kept the wound open by a perforated silver tube. The patient felt relief, but soon had a pleuritic exudation as an intercurrent disease, which disappeared in less than two weeks. Discharged from the hospital as cured she felt well for two weeks, then symptoms of cerebral irritation returned and with varying intensity lasted until her death, three months later. These symptoms were: Persistent headache, nausea, occasional vomiting, vertigo, stupor, impediment of speech, loss of appetite, constipation. The pulse at first varied between 70 and 88, later sank to 60 per minute, the temperature was between 98.4° to 101°, never changing rapidly. There were no convulsions, deliria, chills or abnormality of sensation. The ear never gave her any trouble, and there never was any discharge from the ear canal, though the drumhead and adjacent portion of the ear canal was red and bulging. Two months before death a sudden swelling was noticed below the head of the other (*left*) sterno-mastoid muscle. The eyes, examined with the ophthalmoscope, were found healthy until the last month, when the development of optic neuritis could be distinctly watched. The extension of suppurative ear disease being diagnosticated, craniotomy was advised, but not consented to until the day before the patient's death.

The operation was made at the patient's house. The opening into the mastoid was enlarged and extended into the cranial cavity by an opening 3 cm. by 2 cm. Dura-mater and lateral sinus found healthy. Then the wound was extended into the tympanic attic by enlarging the mastoid antrum and removing part of the posterior wall of the ear canal with the chisel. No pus being found in the tympanic cavity and the bone being thick and hard, the middle cranial fossa was opened by chiseling a hole 2 cm. in diameter through the squamous portion of the temporal bone, beginning 1 cm. above the ear canal. No extra-dural suppuration was present. The dura-mater and the superficial layer of the brain were incised but found healthy. In the course of the operation the patient became pale and breathless. She was sustained by hypodermic injections of alcohol and by artificial respiration, the latter being kept up until the end of the operation. On account of her feeble condition I desisted from making exploratory incisions or punctures into the brain substance, considering the case then as absolutely hopeless. After the operation, even after the discontinuance of the artificial respiration, she rallied for three quarters of an hour, but then suddenly collapsed and died.

The *autopsy* showed, 1. A perforation in the medial bony surface of the tip of the mastoid process, verifying the diagnosis of the Bezold variety of mastoiditis. 2. The upper part of tympanic cavity densely filled with granulation tissues, but free from pus. 3. The right lateral sinus (that of the diseased ear), healthy, only filled with dark clotted blood. 4. The dura healthy throughout. 5. The pia over the right temporal lobe and the right cerebellar hemisphere milky, its small veins filled with pus. 6. The sinuses in the median line, those adjacent to the median line on the right side, and all the sinuses on the left side, furthermore, the left internal jugular vein as far as the swelling noticed underneath the upper portion of the left sterno-mastoid muscle, filled with pus (purulent thrombo-phlebitis). 7. In the right temporal lobe an abscess of the size of a walnut, and in the right cerebellar hemisphere another of the same size. 8. The remainder of the brain, especially the ventricles, normal. 9. Microscopic specimens and cultivations from the abscesses on the temporal lobe showed a moderate quantity of small bacilli, but chiefly the staphylococcus pyogenes aureus. Examination and cultivation of pus from the cerebellar abscess were negative.

Remarks.—This case is an example of an acute aural catarrh, leading to death through extension into the mastoid and cranial cavities. There never was otorrhœa, yet there was suppuration in the mastoid. No signs of otitis externa having been noticed the pyogenic germs must have travelled from the naso-pharynx (she suffered from acute attacks of coryza) through the Eustachian tube into the middle ear, and through the antrum into the mastoid process, here developing that slow form of mastoiditis which Bezold has so masterly described. This form is distinguished by a tendency to seek an outlet for its inflammatory products at different places along the inner table of the bone, viz.: *a.* Perforating it on the medial side of the tip and extending down into the neck alongside the sterno-mastoid muscle. *b.* Perforating the posterior wall of the ear canal and discharging its products through a fistula in the canal or through the tympanum. *c.* Perforating the cranial cavity, producing extra-dural suppuration and cerebral or cerebellar abscesses. I have seen examples of each of these varities of this form of mastoiditis, to which of late so much attention has been paid.

In our case the *course of the disease* was as follows: Attacks of coryza for several months. In September after an exposure by lying in the grass and being chilled, a violent attack of otitis media catarrhalis, in both ears, which improved, but was not completely cured. Four weeks later the first symptoms of mastoiditis. Improvement again, then in two months after an evening of gaity, the first cerebral symptoms with swelling of the mastoid extending downward. Evacuation of pus below ear brings relief for two weeks. Large opening of mastoid affords relief for four weeks, in spite of an intercurrent pleuritic effusion. Then the cranial symptoms are marked with short remissions. They are not so clear as to admit of a special diagnosis defining the nature and location of the morbid process. Death from cerebral abscess and thrombo-phlebitis.

The operation of craniotomy was done in the right way, and I would, if a case occurred, do it in the same manner again, only sooner. The uncertainty of a special diagnosis, not the surgical procedure, is the great difficulty in these cases, upon which also v. Bergmann dwells in his classical monograph on the surgical treatment of brain disease (1889).

Symptoms of meningitic irritation are marked in a great number of acute and sub-acute ear diseases, which recover by care without surgical interference. I am afraid that there is at the present day too great a tendency to open mastoids and skulls. Precision in the determination of the indications when or when not to operate can only be obtained by a critical comparison of many fatal cases, especially when post-mortem examinations have been made. As exploratory operations, such as gynecologists now practice laparotomy, both mastotomy and craniotomy are, in my opinion, not yet harmless enough to be justifiable in many cases.

Our case was remarkable by the absence of objective symptoms upon which commonly so much stress is laid.

1. There evidently was suppuration in the mastoid long before external swelling indicated it.

2. The absence of otorrhœa through the whole course is also remarkable and exceptional.

3. There was sinus thrombosis of great extent, without the common symptoms of rapid rise and fall of temperature. I measured the temperature whenever I called, and the sister of the patient did it in my absence, twice daily. It never rose above 101°. The sudden swelling at the left side of the neck, the side of the healthy ear, took me by surprise. It was peculiar in its shape, hard and round, about 2 cm. below the tip of the mastoid, with a sharp inferior limit. Ordinarily, the thrombosed jugular can be felt as a hard and painful cord along the side of the sterno-mastoid muscle. Each of the neurologists who examined the case with me thought that thrombo-phlebitis could be excluded.

4. The sinus thrombosis was more marked on the

side of the healthy ear. I can explain this only by the supposition that the formation of abscesses in the brain and cerebellum preceded the thrombo-phlebitis, and that the clotting of the right lateral sinus interrupted the circulation on the side of the diseased ear. The purulent contents of the small veins in the pia over the abscesses were emptied into the torcular and conveyed by the left lateral sinus to the left internal jugular. The abrupt swelling of the latter can be explained by plugging of the lower part of the vein with clotted blood before liquifaction of the thrombus had taken place, in the same way as the pus had been prevented from passing into the right internal jugular by blood clots in the lateral sinus found at the autopsy. The case shows how occult the objective symptoms of cerebral thrombo-phlebitis may be, and how unexpected the places in which they manifest themselves.

5. The cerebral abscesses showed, aside from the insignificant fever, only one objective symptom during the last month, that was the double *optic neuritis*. Choked disc, as far as experience has proven, is an inconstant and apparently late symptom of otitic brain disease. It does not always indicate a fatal termination of the case, and disappears when the patient recovers, even in cases of pyæmia.

I will conclude this paper with some remarks on the significance of the subjective cerebral symptoms in middle ear inflammation.

1. Transient headache, nausea, vomiting and dizziness in acute cases indicate meningitic irritation. They almost all recover with or without mastotomy, only a few exceptional cases of fatal termination being on record.

2. Persistent headache, nausea, vomiting, and dizziness, especially when the discharge from the ear diminishes, signify the transition of meningitic irritation into real meningitis, and indicate surgical interference, paracentesis of the drum membrane, especially the membrana flaccida when bulging, or opening of the mastoid à la Schwartze or Küster.

3. The above symptoms, with delirium, stupor, impediment of speech, chills, spasms, drowsiness and coma, signify fully developed intra-cranial suppuration. In the majority of such cases it may be difficult or impossible to discriminate between thrombo-phlebitis, extra-dural and cerebral or cerebellar abscess. The special diagnosis and localization, when strengthened by valuable objective symptoms, such as painful swelling and hardness of the internal jugular vein (sinus thrombosis), localized pain on percussion of the skull (abscess), a fistula in the cranial bones (extra-dural suppuration), may justify, even demand surgical interference, namely, opening the posterior cranial fossa to ligate and cleanse the lateral sinus, or opening the posterior or middle fossa to liberate the extra-dural accumulation of pus, or opening the posterior or middle fossa to evacuate an encephalic abscess.

Of all these varieties, a certain, though small number of cases is known in which the diagnosis was correctly made and the operation successfully performed.

Discussion.

Dr. Frothingham:—I speak first in the discussion of these papers, as one of the cases, the fifth reported by Dr. Greene, was seen by me and a more full and complete report is necessary for its proper consideration. In this case there had never been the least indication of mastoid disease that could be determined by local symptoms, or inferred as a probable explanation of any other symptoms. The pain had been in the ear and down the neck in the course of the internal jugular vein, occasionally some pain in the head near the vertex. There was no swelling or tenderness over the mastoid, or in that region, nor was there any feeling of fulness there, or any feeling of discomfort even on percussion over it.

On the fourth day of attack of middle ear disease, there were symptoms of metastatic pyæmia. Abscesses began to appear in the subcutaneous cellular tissue, and the severe rigors and other symptoms pointed to venous trombosis and pyæmia, rather than mastoid abscess. Pyæmia in acute mastoid abscess is not common. Its early appearance in this case, together with the other symptoms, indicated a more direct extension of the disease to the lateral sinus than would likely result from mastoid abscess, even had there been symptoms of retained pus in the mastoid cells. The early and severe rigors were more like those that characterize inflammatory thrombosis. The patient, after the continuance of acute symptoms for about two weeks, had begun to improve, and for a period the temperature had been nearly or quite normal. Then the high fever and frequent chills recurred, new metastatic abscesses began to form in the subcutaneous cellular tissue in different parts of the body; there was nausea and vomiting also. It was about five or six days after these symptoms had reappeared that I saw the case. There was at that time a hardened, cord-like swelling of the internal jugular vein, extending two-thirds of its course down the neck. The least jar, or pressure, or movement of the head caused great pain in this region, and the patient found it necessary to have the head inclined to that side in order to avoid the suffering caused by any traction of the muscle over it. There was nothing to indicate mastoid disease except the fever, and this was explained by the evident venous thrombosis and pyæmia which plainly existed. Besides, it was more like the fever that attends this condition than that of mastoid abscess. The patient seemed to have but a short time to live. With these symptoms I did not advise artificial perforation of the mastoid. I said to the attending physician and the friends of the patient that it was possible that there was pus in the mastoid cells, but it was not probable. That we could not advise operations on possibilities, but only upon probabilities. We have as yet no infallible rules to guide us in making this operation. While some cases are plain, and there are rules that seem imperative, there are yet cases with symptoms so obscure that no rules can be formulated for our guidance. Dr. Buck tells us that some years ago he formulated rules that he thought simple and practicable, but that further experience taught him that there must be numerous exceptions. It has happened to me twice to perforate the mastoid process where the symptoms of mastoid abscess were very well marked, and yet I found no pus, or other evidence of disease. The same has happened very often in the experience of others. Post-mortem examinations have been made when the symptoms of mastoid abscess had been well marked and it was confidently expected that pus would be found, and yet none was found after diligent search. While the operation of artificial perforation is comparatively safe, it is not without danger. Schwartze, who has had a most extensive experience in this operation, and has studied extensively the literature of the subject, attributes two per cent. of death to the operation itself. It should, therefore, only be advised where there is a probability that retained pus or other disease in the mastoid is the cause of the dangerous or unpleasant symptoms from which the patient suffers.

In giving the advice which I did in this case I had to decide at once with the evidence then before me, remembering that even in cases where the operation otherwise might be indicated, that when metastatic pyæmia is well marked the time when a useful purpose can be subserved by artificial perforation has probably gone by.

After a very careful consideration of this case since the post-mortem examination was made, I have been unable to find any reasonable excuse for an operation on the mastoid, based upon the symptoms that existed during the course of the disease. I am aware that without local symptoms, mastoid abscess has been diagnosed by the study of the temperature alone. But these were cases in which, by the study of the symptoms, other causes of the fever could be excluded, and not in cases like this, where without signs of mastoiditis venous thrombosis and pyæmia certainly existed, and better explained the fever than mastoid abscess could. From what we, at present, know of this disease, there will probably always be anomalous cases that will baffle diagnosis, and can only be determined by post-mortem examination. And cases like the one reported can not be operated upon, unless we establish the arbitrary rule to perforate the mastoid in all cases where middle ear disease exists, together with fever, either high or low, or any cerebral symptoms of threatening character, regardless of their nature, no matter what other conditions may be present that fully explain their existence.

Dr. Chisolm, of Baltimore, said, as to mastoid trouble, he feels assured that inflammation of the cells exists much more frequently than is generally believed. Those who have occasion to examine sections of the temporal bone are aware of the great variations in the size of the communication from the drum cavity into the dural cavity of the mastoid. When we remember that the membrane lining each is a continuation of the other, we can easily explain why the discharge is often so abundant, owing to the extensive mucous surface. Should the opening be small, as we sometimes find it to be, its closure through swelling of the soft tissues may incarcerate pus and bring about mastoid abscess. As to instrumental interference, in many cases the indications are clear and demand immediate action. In other cases the symptoms are so illy defined that prudent surgeons abstain from making experimental mastoid openings. I have operated on some patients where I thought the indications were clearly defined and yet found no pus. In one such an autopsy exhibited a general phlebitis of all the venous sinuses, but no pus. In another case where we would have opened the mastoid but found the patient too low to undergo the operation, a large blister covering the back of the neck, and one-half drachm doses of the tincture of the muriate of iron, suggested the doing of something for the dying man, brought about such good results as to eventuate in time in perfect restoration. He has seen cases of profuse discharge of long continuance, sequel of acute aural catarrh, with cerebral symptoms coming on in the course of the disease, irregular walk, beside severe pain over the mastoid region, get well without mastoid section. Such cases would also get well, no doubt, with the section, to which much good would be attributed undeservedly, as the sequel has shown. The difficulty in diagnosing the cases that should be operated upon is the more conspicuous the larger our experience, and I find myself shrinking from doing needless work, even when it is not accompanied with much danger in the operative manual. Not to be too hasty in adopting the heroic treatment is a good surgical quality.

Dr. Knapp:—Dr. Greene spoke of the quantity of pus being so large that it could not originate in the tympanic cavity alone, and pointed to the presence of an abscess. I think that the mucous membrane of the tympanic cavity with the adjacent air cells are sufficient to secrete large quantities of pus, just as we see it in the conjunctiva.

The so-called post-aural abscess is, the more I am acquainted with it, regarded to originate in a suppuration of the middle ear, mostly of the attic. The fistula may be difficult to detect, but the more carefully I seek for it the more frequently I find it, sometimes distant from, for instance, as far as an inch above the insertion of the auricle.

The difficulty in the management of middle ear and mastoid inflammation lies in the diagnosis more than in the treatment. Different symptoms, pain, temperature, lack or presence of discharge, presence or absence of external signs are of value, but none of them in itself is pathgonomonic. We require the appreciation of all the symptoms, in their combination, to arrive at a diagnosis in which there may be one symptom prevalently to guide us in the localization of the lesion and in our action. This we ought to keep in mind also during the progress of an operation. The operation of the mastoid does not involve so great a danger as craniotomy, but I think, with Dr. Frothingham, neither of them ought to be done on a possibility, but on a probability, and in brain surgery only on a probability approaching certainty.

Dr. Burnett said he was in entire accord with Dr. Knapp in what he had said regarding mastoid symptoms and treatment. He would add, however, that in his opinion, no one should open the mastoid in chronic mastoid disease, or in any case where cerebral symptoms had shown themselves, without being prepared to go further and open the cranial cavity. Regarding peroxide of hydrogen, Dr. Burnett would say that he has observed denuded bone on the promontory heal and the membrana tympani close under the use of peroxide of hydrogen instilled into the cavity.

Regarding acute mastoid disease following acute otitis media, he would say that he has never seen a case demanding opening the mastoid, unless the local treatment of the ear after the opening in the membrana had been made, or had occurred spontaneously. After the membrana is opened nothing should be thrown into the drum cavity for fear of irritation and possible mastoid complications. The mere presence of pus in a previously healthy mastoid cavity, in acute otitis media is not sufficient reason for opening the mastoid unless the mastoid symptoms are very severe and increasing, having been present a week. There should be no haste to open the mastoid as resolution of the intra-mastoid congestion will surely take place without such operation.

Dr. Seiss thinks much of discussion bears more upon cerebral surgery than upon aurist's work. Regards blistering the mastoid, when used in connection with proper treatment through the external canal and Eustachian tube, of very great value.

TREATMENT OF OPACITIES OF THE MEMBRANA TYMPANI, ACCOMPANIED WITH DEAFNESS.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY FRANCIS DOWLING, M.D.,
OF CINCINNATI, O.

A distinguished writer on ear diseases says that between the ages of 20 and 40 nearly every third person has some difficulty of the hearing with one ear at least. Although this statement may be somewhat exaggerated, still we know from our everyday experience in practice that there is a very large number of people along towards middle life who no longer hear well with one ear at least, and that, while during the years from 20 to 40, the number who are completely deaf is comparatively few, still the number whose hearing power is below normal is very great.

If we examine these cases carefully, we will find that a fairly large percentage of them present ears with no evidence of disease. In a still larger number, however, the drum-head of one and often of both ears, present conditions of opacity either circumscribed or general, with more or less thickening of the membrane.

These opacities, when present, are usually the result of an antecedent inflammation of the external meatus, or a catarrh of the cavity of the tympanum, or senile changes in advanced age. When, in consequence of the inflammation either external or internal, exudation takes place into the substantia propria of the drum-head, the opacities thus formed are permanent and cannot be removed by any species of medication.

About two years ago I instituted a series of experiments in the treatment of these opacities of the drum-head with a view to clearing them up and restoring the drum-head to a fair degree of usefulness, and thus getting an improved condition of the hearing. The treatment consisted mainly in penciling the drum-head and the adjoining parts of the external meatus with various medicated solutions.

Altogether, something like a dozen different remedies were used, in solutions of water, glycerine, olive oil and albolene. The applications were made from once a day to twice a week, and were continued from one to eight months in each case.

I obtained better results from an oily solution of phosphorus and strychnia in different strengths than from any of the other remedies tried.

The remedy, I think, does good by directly stimulating the membrana tympani, thus increasing its nutritive activity, which in these opacities is usually below par, and thus getting rid of the opacities by absorption of the exuded or deposited material giving rise to them.

I found the influence of the remedy particularly well marked in cases of opacities arising from catarrh of the cavity of the tympanum caused by attacks of la grippe during the late epidemic of that disease. In some of these cases the improvement in the hearing was very great.

In the opacities in elderly people as a result of senile changes the remedy sometimes did a great deal of good, and then again, there was no apparent improvement, even after months of patient treatment. In about 10 per cent. of these cases I succeeded in improving the hearing by the use of this remedy. These elderly people are often very thankful even for a slight improvement in their hearing, and are willing to spend a goodly share of time and money in furthering any treatment that will secure this end.

In cases which present a parchment-looking general opacity with abnormal thickening of the membrane, applications of this remedy or any others of its kind will, in my opinion, do no good. In cases of this nature attended with great loss of hearing power, the only remedy that promises any permanent relief in improving the deafness is a total excision of the drum-head. Making an opening in the membrane by any of the methods that have as yet been proposed does good only for a time, as the opening, by whatever method it may be made, is sure to close up in a comparatively short time, when the deafness again returns.

Probably one of the most ingenious of the appliances that have been devised for keeping the opening from closing is Politzer's eyelet, but even this does not always work well in practice. To begin with, it is a very difficult and tedious thing to get it in place, and then after one has succeeded in doing this the contrivance is readily displaced, during a fit of coughing, sneezing, etc., falling either outwards into the external meatus, or still worse, inwards into the cavity of the tympanum.

I wish to submit here a few cases taken at random from my note book:

Case 1.—Mr. N., aged 40, was treated in January, 1887, for an acute inflammation of the external meatus of the left ear, which he stated was the result of a strong ear injection which he used to cleanse his ear of wax. The disease terminated in recovery. In December, 1891, he came to me, complaining of loss of hearing and a feeling as if a foreign body was in the ear. On examination the drum-head presented a uniform opaque color. The outlines of the malleus and incus could not be distinguished. The watch could be heard at 6 inches from the ear—the right ear had been deaf from childhood. The drum-head and cartilaginous portion of meatus externa was penciled with a solution of 1 gr. to the oz., every second day for a month, and twice a week for two months longer. At the end of this time the hearing power had increased so that the watch was heard at 14 inches.

Case 2.—This was the case of an old man aged 76, who came to me October 6, 1890, complaining of great difficulty of hearing, and was very sensitive about his condition. He had tried everything that had been recommended to him; had tried quack doctors and regulars without getting relief. On examination I found both drum-heads studded with opacities of a calcareous deposit. In the right ear there was a crescentic-shaped patch that occupied half the surface of the membrane. The watch could be faintly heard on both sides when placed in immediate contact with the ears. There was no history of disease of the middle or external ear. I applied a 1-gr. solution in this case, but soon increased it to 2 grs. The treatment was kept up until January, 1891, when there was an increase in the hearing distance of 3 inches by the watch for the right ear and 5 inches for the left ear.

Case 3.—Miss W. has complained of difficulty of hearing for over a year. Had a gathering in her right ear years ago, during an attack of measles. Examination reveals quite a large perforation of the drum-head of the right ear, which probably dates from the attack of measles. She hears a watch at 10 inches with the right ear. The left drum-head is intact, but considerably thickened; the watch is heard at 3½ inches with this ear. This case was under treatment from July 20, 1890, until January, 1891, when the hearing distance had increased to 12 inches with the left ear, the one treated.

Case 4.—Mrs. G., aged 52. In this case the deafness dates from the birth of her last child, now aged 16. Both ears are affected. The hearing distance for the right ear is 28 inches, that for the left ear only 6 inches. Both ear-drums are opaque. A 4-gr. solution was used in this case, but the strength of the solution was reduced to 2 grs. to the oz. on her complaining of a disagreeable feeling in her ears on account of the treatment. The case was treated about a year, marked improvement in the hearing.

Case 5.—This is the case of a young woman aged 25, who came to me in November, 1890, complaining of difficulty of hearing in the left ear. There was a marked general opacity of the drum-head of the affected side; the other was about normal in appearance. Here there was a history of catarrh of the middle ear. I treated the case about two months and gained some improvement, but at the end of this time the patient got tired of the treatment and I lost sight of her.

Case 6.—Mr. S. came to me in the fore part of January of this year, and is still under treatment. He is 60 years of age, and has had difficulty of hearing since he was 40 years of age. Here I used a 4-gr. solution. He could not hear the watch even when placed in contact with the right ear when he came to consult me; now he hears at 1 inch, and at 4 inches with the left ear. The opacities in this case are undoubtedly the result of senile changes.

Discussion.

Dr. Seiss thinks the paper of Dr. Dowling very valuable; has used iodine ointment (10 per cent. in lanolin), with very good results in many cases of aural sclerosis.

Dr. Dowling, in closing the discussion, said: A distinguished professor of surgery in a German university used to say to us that when we got into practice the big operations would fill our heads, but the small ones our pockets. You will all subscribe to this as a truism. The big operations, especially on the ear, do not come to us every day, but a large number of cases do come to us claiming treatment for opacities of the drum-head accompanied by more or less deafness. The patients are doleful in appearance and equally doleful in spirits. They implore us to do something for their failing hearing. Often they get no encouragement from the physician.

The results of my experience in the treatment of these cases I have given you to-day in a terse form in my short paper. I hope others of the gentlemen present will give the remedy a faithful trial and report the results of their treatment at the next meeting of the Association.

In answer to the questions that have been asked I would say that the remedy ought to be increased from 1 up to 5 grs. to the oz. according to the degree and standing of the opacities of the membrane of the drum-head. Furthermore the treatment ought to be kept up for months, and the patients should be told at the start that they need expect very little improvement in their deafness under two or three months' treatment. If the larger doses cause undue stimulation of the membrane with a sense of fulness in the ears, the dose should be reduced, as it is apt to produce a certain amount of giddiness. This occurred in two cases which I treated, but vanished on reducing the dose.

Perforation of the Intestine by a Spoon.—Dr. Libotsky reports the case of a woman in the eighth month of pregnancy who was suddenly seized with the symptoms of acute peritonitis. She died in a few hours, and at the autopsy it was found that the duodenum had been perforated by a silver teaspoon, and the spoon itself was found lying in the peritoneal cavity. It was ascertained, on inquiry, that the woman, while suffering from post-influenzal mania two years before, had swallowed the spoon with suicidal intent. *Centralblatt fur Gynäkologie.*

PEROXIDE OF HYDROGEN AND ITS USE IN EAR DISEASES.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY WALTER B. JOHNSON, M.D.,
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Peroxide of hydrogen, H_2O_2, as it is popularly called, is chemically and correctly the dioxide of hydrogen. It was discovered accidentally in the year 1818 by a French chemist, M. Thenard, but was little used either in manufacturing or in the arts until within the last decade. Pure anhydrous peroxide of hydrogen is a liquid of syrupy consistence, colorless, having an acid reaction, yielding four hundred and seventy-five times its own volume of oxygen on decomposition. The compound is very unstable, constantly on the slightest exposure undergoing decomposition and breaking up into its component parts nascent oxygen and water.

Bizett reports that the pure solution, anhydrous, readily destroys living tissues. Marchand writes "whatever will be the concentration of the peroxide of hydrogen, as long as it is made by the process which I employ in manufacturing the medicinal H_2O_2 it is always a harmless remedy, *but it is* unnecessary to make it more than fifteen volumes for medical purposes."

Peroxide of hydrogen (medicinal) is a three and one-fifth per cent. solution of the dioxide in pure water, from which all irritating or injurious properties have been removed; it yields about fifteen times its own volume of oxygen and is commonly called a fifteen volume solution.

In consequence of the instability of the compound, and to prevent its decomposition, the medicinal solution is slightly acidulated by the addition of minute quantities of hydrochloric and phosphoric acid.

It is slightly acid in reaction, colorless, almost tasteless and odorless, and will if tightly corked and not exposed to light, or a temperature higher than sixty or seventy degrees Fahrenheit, retain its properties for an indefinite period. It may be used in full strength, or if apparently irritating to the patient, it may be reduced to a one per cent. or stronger solution by the addition of distilled or carefully boiled water. It should be applied by glass or hard rubber applicators or sprays, as irritating and dangerous chemical combinations occur as a result of its contact with some metallic substances.

No solution should be used unless it is thoroughly reliable, fresh and free from injurious impurities; the ordinary commercial article is of no value for medicinal purposes, being irritating in its effect and unsatisfactory in the results obtained, in addition to holding in suspension poisonous chemicals.

A chemically pure fifteen volume solution is entirely harmless either for internal or external use, and in this possesses a decided advantage over any of the other drugs used for similar purposes, which approach it in efficacy as a destroyer of pus, bacteria or germs.

The solution, if in perfect condition, upon its application to any diseased surface of the skin or mucous membrane, immediately undergoes decomposition, the nascent oxygen which closely resembles ozone in its chemical effects, is thrown off and enters into affinity with the pus, bacteria or germs present, the pus is destroyed and the albuminoid matters of the secretion are coagulated, the germs and bacteria are annihilated. The nascent oxygen, which is the valuable constituent for cleansing, disinfecting and destroying germs, is in consequence of its instability rapidly converted into oxygen during the reaction. The chemical action of the solution if fresh occurs immediately upon its application and causes the formation of large quantities of white or yellowish colored froth.

The peroxide solution is much more active than any of the other remedies used for the destruction of microbes; the following table, which has been arranged after exhaustive experimentation, by Charles Marchand, the chemist, who manufactures the medicinal solution which is in most general use by medical men, is intended to illustrate the comparative efficacy of various chemicals, in the destruction of the microbes present in half a gram of diphtheritic membrane. The peroxide of hydrogen is claimed by this table to possess qualities as a destroyer of microbes not approached by any non-poisonous drug, and exceeding in efficacy most of the poisonous germicides.

The mixture or solution used contains like the peroxide solution three and one fifth per cent. of the active constituent.

QUANTITY OF THE MIXTURE OR SOLUTION REQUIRED TO ANNIHILATE MICROBES.

	CUBIC CENTIMETRES.
Glycozone (harmless)	0 75
Biniodide of mercury	1 00
Biniodide of silver	1 33
Marchand's peroxide of hydrogen, medicinal (harmless)	2 00
Bichloride of mercury	3 00
Nitrate of silver	5 00
Hypochlorite of lime	9 00
Chlorine gas (aqueous solution)	10 00
Iodine	10 00
Bromine	24 00
Iodoform (when fresh)	28 00
Salicylic acid	40 00
Muriatic acid	100 00
Carbolic acid	128 00
Permanganate of potash	140 00
Chlorate of potash	158 00
Alum	180 00
Tannin	190 00
Common salt	196 00
Sulphide of calcium	201 00
Boracic acid	300 00
Sulphurous acid	325 00
Lactic acid	360 00
Chloride of iron	371 00

The pus or blood-corpuscles which come in contact with the hydrogen solution are immediately destroyed by the chemical action; it is not necessary to remove the resulting froth; it should be allowed to remain even when other applications are to be used, as it forms a protective for the exposed tissues and does not interfere in any way with the effect of any other desired medication. Glycozone, which it is claimed possesses qualities as a destroyer of germs greater than the peroxide of hydrogen itself, is recommended for use in the subsequent treatment of diseases, in conjunction with it. Glycozone is a preparation of chemically pure glycerine saturated with fifteen times its own volume of ozone under pressure; it is quite different from the peroxide of hydrogen medicinal, and does not part with any of its ozone upon application to diseased tissues; it is intended for use in place of the many astringent or healing applications so much in vogue. It, as well as any application which the physician desires, may be used after the peroxide has been applied with better effect than if the wound was cleaned by ordinary methods, but no application should be made until the pus, etc., is entirely destroyed by the hydrogen solution

The effect of peroxide of hydrogen upon suppurative diseases of the ear has been frequently demonstrated. The full strength fifteen volume solution may be used in nearly every case; infrequently it will cause a moderate amount of pain, in which case the strength of the solution should be reduced by the addition of pure water.

The solution should be applied by syringing, dropping it, or carrying it into the ear on a cotton swab; the immediate effect is the production of a white or yellowish brown froth which will continue to form as long as there is any purulent or albuminoid matter for the drug to act upon. When no more gaseous emanations are present the ear will be found free *from pus and perfectly clean.*

The peroxide solution, it is claimed, has many advantages over any of the other germicides for cleaning deep cavities; its susceptibility to use in any quantity without danger of toxic effect; that the pathogenic bacteria of any species are totally and rapidly destroyed; the ability not only to destroy the products of decomposition and fermentation, but by the quality of effervescence during decomposition to carry forward and without the wound all such products, which it would be difficult to reach with ordinary solution by syringing or injection.

Any remedy may be used in the treatment of the disease subsequently to the application of the solution, the effect of the application itself being simply to render the parts perfectly aseptic and place them in a favorable condition to assist nature's reproductive process.

The application should be made every day, or at least every second day by the physician in charge of the case; the patient should be directed to drop five drops of the solution in the ear three times each day after thoroughly wiping out as much pus as can be easily removed; the glycozone or some of the other applications in general use should be applied immediately after the ear is thoroughly cleaned. In catarrhal otitis it is claimed that in addition to a specific effect on the catarrhal condition the peroxide of hydrogen medicinal has proved of great use in soothing the mucous membrane and rarefying the air in the middle ear, the Politzer bag being used to inflate the tympanic cavity immediately after the application, thus forcing the solution into the middle ear in an effervescing condition.

The peroxide solution may be used advantageously in the treatment of mastoid disease after an incision has been made. The action of the remedy upon bone denuded of its periosteum, and even upon carious or necrotic bone, is unique; it causes a disintegration of the molecular particles and they are gradually subdivided and carried away in the frothy product of the chemical action, until a healthy surface appears upon which the solution seems to have only a beneficial effect. The action of the solution upon dead bone can be readily demonstrated by placing a small portion of necrotic bone in it; the bone will in a short time begin to disintegrate and continue to do so until it is entirely divided into very minute particles.

In some of the cases of mastoiditis treated, in which the denuded surface was very extensive, in from three to six weeks the bone would be in a perfectly healthy condition, the discharge of pus controlled, and the subsequent closing of the wound, when allowed, occurred rapidly and was perfectly satisfactory.

In one of the cases, in which for three years any attempt to allow the closing of the sinuses would be followed by an exacerbation of the inflammation, the carious condition was relieved and the opening allowed to close after two months of treatment.

The treatment is very simple and consists in syringing through the opening and into the meatus with a small glass syringe a sufficient quantity of the fifteen volume solution, at each sitting, to render the pus thoroughly aseptic, then packing the ear and the wound lightly with strips of sheet lint or gauze *thoroughly soaked in the same solution, great care* being taken to allow the wound to close, although the packing must not be so introduced that it will prevent the free exit of any pus which may be formed during the interval between the dressings. The external incision should be made ample and if the packing does not prevent the opening from closing during the progress of the treatment it must be reopened with the knife. Glycozone has been suggested for use in keeping the wound open, being used instead of the peroxide in the dressing.

The result of this line of treatment which has been followed in a considerable number of mastoid cases, has indicated the possibility of a degree of conservatism in the treatment of mastoid disease which is very desirable.

All the cases treated have done well, no deaths have occurred and in no case was it considered necessary to scrape the bone or to remove any portion of it, while the period of time necessary for the wound to assume a sufficiently healthy condition to render it advisable to permit it to close, did not seem longer than the time which must ordinarily elapse after the operation for thoroughly scraping the mastoid, and was much shorter than the time required before the wound produced in chiseling the mastoid could possibly be allowed to close.

Special care should be taken to keep all the applicators or sprays, used either with the peroxide of hydrogen solution or glycozone, perfectly clean, especially in case of mixtures of glycerine and peroxide which should be made fresh every second or third day to prevent the possible formation of formic acid; only silver, hard rubber, glass or porcelain should be used for measuring purposes.

If care is taken to properly keep the solutions, they are perfectly harmless and calculated to be of inestimable benefit to all who use them.

NASO-PHARYNGEAL LESIONS DUE TO CENTRAL VASO-MOTOR CAUSES.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY RALPH W. SEISS, M.D.,
OF PHILADELPHIA, PA.

It has long been known by laryngologists that various lesions of the naso-pharynx are *essentially* nervous diseases, dependent on central causes, but the literature of the subject is not extensive, nor do any very definite conclusions appear to have been expressed.

The naso-pharyngeal diseases which I will consider as being due mainly to cerebral causes, are certain forms of "nervous coryza," including some types of obstructive enlargement of the turbinated tissues; recurrent engorgement of the lateral pharyngeal walls not dependent on inflammatory causes; and various forms of pharyngeal and lingual varix, especially of the base of the tongue. All of these diseased conditions may be classed among the *angio-neuroses*, and appear to be due either to some mal-condition of the vaso-motor centre in the medulla oblongata, or to truly cerebral conditions.

"Nervous coryza" in its various phases, all of which more or less resemble attacks of typical hay fever, has an extensive literature, and has been studied in much detail. That the seizures may be due to purely mental factors, such as anxiety, fright or anger, is, however, not very often noted, though of frequent occurrence. Some of the most typical cases I have seen have followed nervous breakdowns from excessive brain work or worry, and all have occurred in so-called neurotic individuals with irritable hearts and tired-out nervous systems. The relations of the conditions named to "rhinitis sympathetica" was pointed out by J. N. Mackenzie, in 1885, and has since been noted by many rhinologists. The association of the nasal condition with very marked *general* vaso-motor neuroses in all cases has not, however, been brought into much prominence. Almost invariably patients with "nervous coryza" complain of troublesome cardiac action, profuse perspiration on slight exertion, sensations of numbness, etc., in the limbs, cold extremities, headache and "nervousness."

The results of inspection are only conclusive when considered along with the general history; a constant condition, however, is *intermittent* distention of the vascular sinuses, generally very marked, and the swelling being accompanied by but slight superficial changes or inflammatory redness.

Passive congestion of the vascular areas about the palatine arches has been recognized frequently to be a pathological condition not caused by any of the usual factors of inflammatory states, and the resulting discomfort as most difficult to relieve by local treatment. Angio-neuroses of the pharynx may occur in cases of rhinitis sympathetica, or of lingual varix, or may be found alone. The attack may come on suddenly, following physical or more especially, mental overexertion or emotional excitement, or the condition may persist and become chronic. The symptoms are local "throat-fretting," as I have called the various sensations described by patients, particularly a feeling of local fatigue and weakness, and in some cases, a burning sensation quite unlike that of any form of inflammatory sore throat. Constitutionally the patient presents the usual characters of nerve weakness and low blood-vessel tone, and is usually decidedly emotional and neurotic. The appearances on inspection are those of great vascular relaxation, and large, varicose vessels may traverse the half arches; the ordinary lesions of chronic pharyngitis may also be present in varying degree. The conditions are very transient, and may subside in a few hours, or may persist without intermission, although great variability is characteristic of the disease.

Varix of the lingual tonsil and epiglottis has been written upon by many observers, and its occurrence with general vaso-motor neurosis noted; but its association with grave *central* lesions has not been emphasized, though Dickson regards it of diagnostic importance in brain and heart lesions. The clinical history of such cases is much the same as that of the other angio-neuroses mentioned, the whole vascular and nervous systems being usually much below par. The local symptoms may include marked paroxysmal dyspnœa, which, as in a case lately under my observation, may threaten life, and the hydra-headed sensations grouped under the name paræsthesia.

Examination with the laryngeal mirror shows the well known gorged, tortuous veins, blue or purple in color, radiating from the lingual tonsil over the base of the tongue, the lingual surface of the epiglottis, and the lateral pharyngeal walls. Advanced changes in the whole upper respiratory tract are also decidedly the rule in these cases.

The following brief history of cases illustrates the various types of angio-neuroses of the upper respiratory tract.

Case 1.—Mr. M., music teacher, 25 years of age; belongs to a neurotic family, but claims to have been well until lately. Has marked cardiac irritability, sleeplessness and much local discomfort in the throat and nose, coming on only when *fatigued*, and consisting of pain, hoarseness and dryness. Examination showed great vascularity of the lateral pharyngeal areas; a tortuous vein larger than a match stick traversing the posterior half arch of both sides. The lingual tonsil was enlarged, its vessels dilated, and the larynx somewhat hyperæmic. Treatment consisted of rest, strychnine and coca wine internally, and sedative sprays and pigments locally. Complete relief resulted, lasting for more than a year, but a relapse has lately occurred, and the patient is now absent in Europe.

Case 2.—Miss A., 31 years old. Has had thyroid goitre for 9 years, lately has had cardiac palpitation, tinnitus aurium and "risings" and discomfort in throat, and impairment of general health. The turbinated bodies at two subsequent daily visits showed complete contraction, as if cocainized, and equally complete stenosis of the nares from relaxation; this was repeatedly observed. The lingual fossa contained numerous varicose vessels pushing the epiglottis so far backward as to hinder laryngoscopy. Rest and tonics were ordered and systematic faradization begun, but the patient discontinued her visits as soon as slight relief occurred, and the ultimate result of treatment cannot be given.

Case 3.—Miss M., professional nurse, about 26 years of age. Has always been vigorous and healthy until last few months, having worked at her profession without holiday for four years. Now complains of numbness and other paræsthesias in limbs, heart pain and tachycardia, sore throat and cough of a short, irritative character. Examination showed an irritative rhinitis, of typical vaso-motor or "hay-fever" type, and engorgement of the lateral pharyngeal and lingual areas. Treatment consisted of a month's perfect rest in the country, bromides for sleeplessness, tonics, general faradization and sedative local applications. Complete relief resulted in about two months, and continued through a winter of very hard work, but ceaseless care with a dying cancer patient has recently brought about a perfectly typical relapse, with constant irritative cough and much pain over the cardiac region.

In addition to the more typical angio-neuroses of the upper respiratory tract, central nervous causes bear an important part in the etiology of diseases of the naso-larynx. It is a fact in the experience of the writer and his colleagues that, outside of syphilitic patients, worse cases of irritative rhino-laryngitis are seen in private practice and among the mentally and emotionally over-worked, than in dispensary service, and the writer has for years regarded the "catarrhal tendency" and "neurasthenia" as practically synonymous; especially is this shown in cases of naso-pharyngeal and aural sclerosis, such patients almost invariably having very poor circulations and irritable cerebral centres. The association of pharyngeal varix with enlargement of the *thyroid gland*, as in the case cited above, is not at all rare in females, and was noted by Lennox Browne some years ago. Varicose veins in other regions of the body have also been frequently noted, and are "concomitant evidences of the dyscrasia."

The results of persistent vascular distention from central causes are, according to pathologists: 1. Increased *vulnerability* of the area affected, a slight irritant causing inflammation. 2. Hypertrophy of the tissues in some cases. 3. Fibroid changes or induration, followed by atrophy. Bearing these consequences in mind, the local changes in very many cases of throat and nose disease are logically explained. The great tendency of such patients to suffer from acute inflammatory attacks, the hypertrophic changes which occur, and the sclerotic and atrophic lesions which are characteristic of advanced catarrhal cases, are all accounted for. Accepting the fact that many cases of "catarrh" are due solely to disease of the vaso-motor centres, the total failure of local treatment in numerous instances is also satisfactorily explained.

Leaving the attractive study of the nerve paths by which neuro-paralytic or neurotonic hyperæmia is produced, the important subject of treatment demands attention. All laryngologists, who are also comparative pathologists, must have been struck by the great rarity of *chronic* rhino-laryngitis in the lower animals, many of which are subjected to the same conditions of environment as their catarrh tormented lords. The writer believes that the most important reason for this state of things is the non-neurotic and well-controlled vaso-motor centres of the lower mammals; blushing, Reynaud's disease, *non-inflammatory* varices are conditions yet to be reported, I believe, by veterinary pathologists. It is, therefore, evident that treatment should be largely devoted, in these cases, to the nervous system to secure the best results. The therapeutic measures of most value are well chosen climatic changes, rest, systematic outdoor exercise, regulated bathings, frictions, and massage. General faradization has a very happy effect in many cases, and is always employed by the writer, a weak current being generally used. Drugs are less satisfactory, but strychnine, perhaps best given by hypodermic injection, and the bromides frequently act well, and tonics are, of course, always indicated. Medicines acting directly on the vaso-motor system, as camphoric acid, atropine and digitalis, are sometimes indicated, and many cases will need the approved treatment of tachycardia in detail. Local treatment has at least a palliative action, and may also operate by transmitting favorable influences to the medulla, since it is well known that an irritation may thus be transmitted and reflected back upon the vaso-motor nerves. On the other hand badly chosen local therapeutics, acting as an irritant, is quite certain to operate injuriously on the vascular centres and increase the original disease. Especially may ill-timed operations, as the writer has again and again seen, act as nerve depressants and seriously exaggerate both the local disease and the general neurosis. It is my habit to treat cases of undoubted angio-neurosis with the utmost conservatism, using only the mildest applications and methods, and depending at least as much on hygienic and constitutional measures, as on local treatment. Energetic operative procedures are in a few instances, however, absolutely necessary, as shown by the following case:

Lawrence A., aged 13 years; a typically neurotic and emotional boy, suffering from nervous headaches, excessive sweating, enuresis nocturna and mental disturbances amounting almost to hallucinations. The nares were blocked from end to end with vascular enlargements, completely contractile under cocaine, and at rare intervals disappearing almost entirely of their own accord. Tonics, exercise and the strict routine of a large school brought about much improvement, but the occasional stenosis was so annoying that operative measures were advised. I used the galvano-cautery, chromic acid and the Jarvis snare, in turn, at intervals extending over a year, and finally secured a satisfactory breathing space, the amount of vascular tissue removed or tacked down on either side being certainly as large in bulk as the little finger, the capillaries seeming to dilate almost as fast as the paretic sinuses were removed. Although the final result has been fairly satisfactory, there is no doubt in my mind that each operation was *per se* an irritant to the vaso-motor centres, and to a degree added to the diseased condition. I should not have employed such energetic measures had the patient been an adult, or if general improvement had not first resulted.

Of special drugs locally useful in angio-neurotic cases, benzoate of sodium (10 to 20 grains per ounce of water), used as a spray, is specially sedative and valuable as a throat application. Menthol (10 to 30 grains per ounce of alcohol and glycerine) has also a most beneficial effect in the same class of cases, when used as a pigment applied directly to the areas of paræsthesia. The volatile oils of sassafras and cinnamon, menthol, thymol and camphor are valuable medicines in spray form for nasal applications; they may be variously combined, and used in either aqueous solution or dissolved in one of the bland petroleum oils. Any of the standard sprays or pigments may be indicated in a given case since the ordinary inflammatory lesions of the naso-pharynx may occur and require treatment in a typically "central" case, and it is especially important that the whole nasal-bronchial mucous membrane be put in as healthy condition as possible. Future observations will, doubtless, at an early date more clearly outline the etiology of pharyngeal neuroses and discover more rational methods of cure; but the writer cannot believe that these will consist of local destruction of tissue, or will be accomplished by a new cauterizing agent or an electric saw. At present scientific treatment would seem to include all measures recognized as general or local nerve tonics, and to rigorously debar all irritants, depressants and abnormal vaso-motor excitants; and in direct relation to the constitutional good effects of such treatment, will be the improvement in the local angio-neuroses.

Discussion.

Dr. Dowling, of Cincinnati, said:—I was very much interested in the able and very ingenious paper of Dr. Seiss, of Philadelphia. I am sorry I am not sufficiently well acquainted with the subject, to discuss it as intelligently as it has been presented. I think that the internal administration of strychnine and arsenic with extract of hyascyamin, does a great deal of good, owing to their sedative and tonic influences on the nerve centers. I have derived excellent results from this treatment in sympathetic affections of the mucous membrane of the eyes. caused by congestion of the nasal mucous membrane, owing to disease of that covering. In addition to this I would recommend salt water baths as an adjunct.

Dr. Price Brown remarked:—In the hyperæsthesia of nasal mucous membrane I have found. particularly in hay fever, that treating certain spots, particularly portions of inferior turbinate and a spot situated between the middle and inferior turbinates anteriorly, also a spot almost opposite the last mentioned, as the septum, with galvano-cautery has been followed with best results.

Dr. Thrasher said that while in the main he perfectly agreed with the author, yet in some minor particulars he must differ. In cases of obstruction of naris he often found the deep antero-posterior cautery act well, binding down the bulging mucosa to the bony structures by cicatricial adhesive bands. The varicose lingual base he had rarely associated with neurotic diseases, and he would rather consider the connection accidental than causal. He thought that the lower animals had been not sufficiently well observed as it was quite well known that many monkeys, birds, etc., blushed or exhibited analogous phenomena.

Dr. Hubbard, of Toledo:—I want to add my testimony to the statement by Dr. Seiss that the use of astringents and galvano-cautery are, as a rule, to be avoided in cases of pure vaso-motor catarrhal conditions. His treatment as outlined is excellent, and I have supplemented it with a special apparatus for securing the effect of heat and cold within the nasal cavity. A small, soft rubber bag about the size of the small finger of a glove is slipped over the end of a soft catheter and secured by winding thread around the open end of the bag and catheter. There should be a small stopcock or cut-off between the catheter and syringe. Insert this dilator gently (having first used a solution of menthol in al. vas.) and then inflate with hot and cold water alternately by means of the syringe. Allow each to remain in contact a minute or so. This method is not applicable where there is a bony obstruction to the canal except after operation. This is a very useful apparatus in epistaxis where the source of hæmorrhage is beyond the reach of the cautery, and it is a very proper substitute for the barbarous old-fashioned post-nasal plugging apparatus.

Dr. Seiss regards laryngeal and nasal disease as *the* cause of laryngismus stridulus, and local treatment as the first indication. Thinks cocaine injurious in all vaso-motor cases. Admitted the blushing of certain birds and monkeys, but spoke only of the ordinary domestic mammals. Thinks the local use of hot and cold, as mentioned by Dr. Hubbard, as very valuable.

TONSILLITIS AS AN INITIAL SYMPTOM OF ACUTE RHEUMATISM IN THE ADULT.

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892

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In attempting to present this subject, I am actuated not especially by the novelty of the subject, which nevertheless I am compelled to believe is far less common than some writers would have us believe, but by the uniqueness of the case, the history of which is herein given, and a desire to direct attention to the two important subjects of diagnosis and treatment. It is well-known that tonsillitis not infrequently occurs during an attack of rheumatism, especially in persons of scrofulous and rheumatic diatheses; but it is only as an introductory symptom that it requires diagnostic skill, and becomes of importance in determining the character of treatment. I now wish to give the history of a succession of cases in the same individual. In giving the history of these attacks, I shall give it in the order in which the attacks occurred. I treated the patient in the last attack only. The history of former attacks was obtained from the patient. The patient is now thirty years of age. At the age of seventeen, he had an attack of non-suppurative tonsillitis. The duration of this attack of angina was about two weeks. It was immediately followed by acute articular rheumatism of two week's duration. At twenty years of age the patient had an attack of suppurative tonsillitis which lasted two weeks. Acute articular rheumatism again promptly followed the tonsillitis. This attack of rheumatism was very severe, protracted, and general. At twenty-nine years of age, the patient experienced a third and severe attack of suppurative tonsillitis which lasted four weeks. This attack of tonsillitis, as in previous instances, was followed by rheumatism which was severe, general and of five month's duration. At the age of thirty, and in February of this year, the patient had his fourth attack of suppurative tonsillitis which lasted about one week. This attack as usual with this patient, was followed by other symptoms of inflammatory rheumatism. This attack of rheumatism was pretty general, many of the joints being more or less affected. The duration of the attack, however, was comparatively short. The patient was confined to the bed one week, and to the house two weeks. There was not complete recovery, however, for several weeks, which I attribute to the patient resuming work too soon.

A few observations on this recurring series of diseases may be of interest. The individual is a strong young man. His occupation has been varied. At the time of his first attack, he was a laborer in a rolling mill. For the last year, he has been engaged in the insurance business, doing office work. He did not inherit a rheumatic or scrofulous diathesis. Neither did he inherit any predisposition to throat affections.

He cannot in any instance recall any exciting cause, such as exposure to cold and damp. He has never had tonsillitis without rheumatism following it. He has never had rheumatism without tonsillitis immediately preceding it. The tonsillitis has been suppurative in the last three attacks. The duration and severity of the attacks of rheumatism have been in proportion to the duration and severity of the attacks of tonsillitis. In no attack has there been any subjective symptoms of rheumatism prior to the subsidence of the tonsillitis. Neither were there any objective symptoms aside from those characteristic of the tonsillitis. In the first attack, there was a mild throat affection, and a light and short attack of rheumatism. In the succeeding two instances both the tonsillitis and rheumatism were severe and prolonged. In the last attack, both diseases were moderately severe but of brief duration. I desire now to call your attention to the case in a diagnostic and therapeutic point of view. Ability to recognize the exact character of the tonsillitis, is especially desirable, for it would impress the patient with the physician's keen and far-reaching insight into his disease and also afford him an opportunity to try abortive treatment. When called to treat the patient for tonsillitis, he asked me to give him also preventive treatment for rheumatism, saying that rheumatism would develop as soon as recovery from tonsillitis had been accomplished, and justified his prediction by his experience. The patient made the diagnosis and I had only to confirm it. The disease was of two or three days' standing, the patient having come from a neighboring town. There was a feeling of dulness and languor for two or three days preceding the attack. Patient's attention was next attracted by pain which accompanied the act of swallowing. Constitutional and local symptoms followed. Other points of differentiation were the more general, inflammation, hyperæsthesia and swelling of the peritonsillar tissues and structures of the neck, pain more diffused on the side on which the tonsil was inflamed, and the very rapid shifting of the disease, and pain from one tonsil to the other. The acceleration of the pulse and the elevation of temperature, which ranged from 101° to 103°, were less marked than ordinarily obtains in idiopathic tonsillitis of equal severity. At this juncture, and before speaking of treatment, I will merely allude to the etiology of rheumatism without any attempt to discuss the various theories for it. Whether the causative agent is developed within the body or enters it from without in this, the germ era of medicine, with the history of the above and similar cases in mind, one can but feel a great deal of assurance in assuming that the causative agent is a germ or substance which enters the body through the crypts of the tonsils, lodging there and producing inflammation, or, if entering the body elsewhere or developing within, that the disease substance collects in or concentrates its force on the tonsillar tissues. With this view of etiology in the above case it would appear that proper local treatment would be fully as important as constitutional treatment. Therefore in the above case, I determined to abridge the course of the tonsillitis, hoping thereby to modify the course of the rheumatism. In what measure I succeeded may be fairly judged by the result already mentioned.

Treatment consisted mainly of free and repeated lancing of the tonsils with the use of warm water to promote bleeding. Anodyne and antiseptic sprays, prompt and complete evacuation of pus, which formed in one tonsil only, with saline cathartics and mild anti-rheumatic treatment. I learned from the patient that depletion had not been practiced in his former attacks and the abscesses were allowed to open spontaneously. We cannot wonder then at the prolonged and severe attacks of rheumatism that followed.

In view of foregoing facts I am compelled to believe that in cases of rheumatism in which parenchymatous tonsillitis is an antecedent symptom, the disease is at that stage largely local and affording exit for the disease germs and their morbid products by free depletion, and early evacuation of pus when there is suppuration will aid marvellously in abridging and mitigating the subsequent attack of rheumatism, if not entirely prevent it.

SOME CHARACTERISTICS DISPLAYED BY THE HUMAN MIND WHEN PLACED AT A DISADVANTAGE—A PSYCHOLOGICAL STUDY.

Read before the Section of Neurology and Medical Jurisprudence at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY T. L. WRIGHT, M.D.,
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When the traveller in the dusty and parched desert, views the mirage afar off, promising water to his burning lips, and the cool shade of green trees to his heated and weary frame, he hastens his pace, that he may the more speedily enjoy the refreshment and repose that seem to be almost within his grasp. But as he journeys onward, the pleasing vision recedes; it slowly fades—it disappears. Yet, how real, how true it seemed! Had some accident turned the beholder from his path, and he had failed to detect the illusion, his convictions would ever have remained true to the idea, that the phantom picture was a veritable reality. Indeed, thoughts and convictions, and conduct legitimately derived from a belief in the material certainty of the scene—though erroneous and possibly criminal—could by no fair rule be imputed to him as an agent truly responsible.

To illustrate the mystic snare in the meshes of which the mind may be entangled, and held prisoner—when no opportunity is presented to test and verify the *seeming*, by comparison with the substantial and *material*—the pretty fable of the imprisonment of Merlin, the necromancer, is quite in point.

The "Lady of the Lake"—called also the Fair Viviane—was enamored of Merlin, as indeed he also was of her. Casting about for some way by which she might detain him "for evermore," she persuaded him to impart to her, some of the secrets of his art. "At length it fell out, as they were going one day, hand in hand through a forest, they found a bush of white thorn. They seated themselves under the shade of this bush upon the grass, and Merlin fell asleep. Then the dame rose and made a ring with her wimple round the bush, and round Merlin, and began her enchantments, such as he himself had taught her; and nine times she made the ring, and nine times she made the enchantment, and then she went and sat down by him. And when he awoke, it seemed to him that he was enclosed in the strongest tower in the world, and laid upon a fair bed. Then he said to the dame, 'you have deceived me unless you abide with me, for no one hath power to unmake this tower but you alone.' And Merlin never went out of that tower where his mistress, Viviane, had enclosed him; but she entered and went out again as she listed."

In order to obtain his freedom, all that Merlin had to do was to make the effort and walk out of the seeming prison. But the illusion was so vivid and truth-like, that the mind was servilely submissive to the delusive yoke placed upon it. Thoughts, convictions and acts, based upon such a condition of hypnotic trance, could not, by any reasonable consideration, be held as proper subjects of accountability.

There are other sources of delusion, it is perhaps superfluous to say, besides the apparent freaks in nature's laws exterior to the physical organism, and besides the weakness and unsteadiness of the nervous energies within it.

Diseases within the brain not infrequently affect one or more of the senses in a manner analogous to the impressions received through normal avenues. The mind is ignorant of the source of sensations thus originating; and they are, as a rule, wrongly interpreted. Yet the will directs the personal conduct in a way that would accord with the healthful operations of the perceptive faculties. So convincing are morbid hallucinations, that the mind is prone to receive them as representatives of the material forces of surrounding nature; and its movements are most likely in a line with their false and delusive teachings. It is evident that responsibility, for acts growing directly from the impulses of hallucination, should not be esteemed as complete. Hallucinations, as well as epilepsy, and other nerve and mind disabilities, may come from *traumatism*, as well as from brain disease. Injuries, though distant from the great nerve centers (not to mention the presence of foreign bodies in the physical organism), may produce such morbid nervous impressions as will simulate disease of the brain itself.

It is moreover true, that while the nervous system is in a morbidly receptive and impressible state, some very striking movement of the perceptive faculties may become aroused. A time may come when the system of nerves may again occupy a similar or identical position. In such an event, there is liable to occur a *suggestion*, which will bring to mind that same vivid perception that had been once before associated with the pending and peculiar nervous state. In this way, many strange and incongruous fancies may be generated. Dreams, somnambulism, trances—with their disconnected phantoms, their images awry and half fashioned, and their procession of ever changing shadows, and airy, though fearful nothings, have such birth as this. Here too, is total absence of sound sense and reason, although the will itself may be compelled to enter into the service of this farrago of nonsense. Under such conditions of misapprehension it is clear there is absence of moral and mental responsibility.

It is probable that few persons if any, are exempt from the trickery and deceit which are liable to be imposed upon the human mind by concealed agencies. The best poised and calmest intellects have, no doubt, their brief seasons of illusion, of hallucination, and of dangerous delusive beliefs. The deed is done. The irrevocable word is spoken. Whence comes the impulse of which it is the outcome? "I can give no reason. It is an impenetrable mystery to me!" This is the exclamation heard very often indeed, in that period of time called—"too late"—a period fully within the possibilities of every man living.

Let us now turn to another phase of our subject, and examine some of the characteristics of the human mind when placed at a disadvantage through the influence of toxic agents. We are at once struck with several particulars that have not appeared in our observations hitherto. We have been describing the senses when, to a considerable degree, they were deceived in their individual capacity. We are about to speak of the senses overwhelmed *en masse*. We have been noting defects that were mostly circumscribed in their range and application, that in fact, preserved to themselves some small quality of system and order. We are about to speak of mental confusion, incoherence, wreck. We have been treating of simple intellectual *incompleteness*, the causes of which have been mainly exterior to the bodily organism, and occurring without the complicity of the mind itself. We now proceed to examine the *total dissolution* of the mental and moral natures, brought on (as some declare) by the deliberate and wilful act of the victim himself.

In this work I will confine my thoughts to the alcoholic inebriate. I will speak of facts and principles in their general aspects, taking no account of the many exceptions and cavils that invariably beset comprehensive propositions.

In the family of man, there is a large number of individuals who live habitually under the control of a nervous system of exceeding and abnormal sensitiveness. Impressions are absolutely startling in their intensity; and the mind seems continually to be waiting in painful suspense, lest some new and unwelcome sensation should suddenly present itself. Perceptions, instead of leading to rational and practical knowledge, appear to palpitate throughout the whole mental and moral being, and arouse by an irrational but boundless sympathy, unexpected and undesirable associations. To the neurotic, the future is clothed very often, in impenetrable darkness, and is filled with possibilities of hopeless woe; and of these his fancy is incessantly seizing upon some, which he holds to his heart as realities.

In a very wide sense,feeling is living; and feeling, in the neurotic, is a pitiless and unceasing torture. A man finding himself in the midst of fire will jump out of it; and little will he reck which way he leaps, or what may be the consequences to himself or to others. Considerations as to that matter do not enter into his motives in avoiding the flames. Casuists may dispute as to the quality of will, involved in the case. Certain it is, that such an escape is not in obedience to free will, to will invested with the capacity of choice. It is merely an example of the instinct or impulse of self preservation, which is common to the nature of all animated beings.

In a manner analogous, when a mind is chafing under the oppression and tyranny of an universal nervous irritation, it will be compelled, sooner or later to seek some measure of relief; and that too, without much consideration as to the means it may be called upon to employ. It is wholly immaterial to one suffering in a prolonged nervous agony, whether, " being sane he knows the effects of alcohol on him, and therefore, he is responsible for them," or not. The legal apothegm does not cover all the material points involved. Like one in the midst of a sea of fire, the inebriate has became frantic for relief. He does not drink to create effects, he drinks to destroy effects. He knows that alcohol will afford rest from his consuming nervous inquietude; and he appeals to it as the one available instant refuge.

An immediate effect of alcohol upon the human body is the production of partial paralysis. While this appears to extend throughout the entire system, it also seems to vary somewhat in its intensity as it affects different portions of the organism. For the alcoholic impression as a whole, does not depress or hinder the bodily functions equally. Judging from the tumultuous but discordant movements that attend physical and mental activity while under the influence of alcohol, the inference is, that this incoherence results from irregularity in the power exerted by that agent, over the several departments of the corporal structure.

Alcohol is a speedy and reliable anæsthetic. By it, the morbid sensitiveness of the neurotic constitution is allayed. Sensation is blunted; perception is proportionally dulled, and they cease to worry and distress the mind and nerves. A welcome repose comes where but a little time before, there were doubts, fears and painful anticipations.

Another alluring element of rest to the perturbed mind of the neurotic. is the influence that anæsthesia exercises upon the faculty of attention. Everybody knows how tiresome it is to hold the attention firmly in a given direction, when the nervous system is in a state of prostration. When convalescing after serious illness, it is common to lose one's self in the midst of some brief narrative, and inquire with a sigh of fatigue—" where was I, what was I talking about?" The dullness of the perceptive faculties induced by anæsthesia, separates the mind in a notable degree, from the world surrounding it. The association between the material and immaterial is interrupted; and the mind like a ship without rudder or compass floats away on the shoreless sea of an uncurbed imagination.

This leads to the consideration of another one of the primary effects of alcohol upon the mind; and it is the immediate result of blunting the sensibilities and the perceptive faculties by means of anæsthesia. The authority of *attention* having been withdrawn from the world of thought and feeling, the mind wanders free and untrammeled. No longer occupied with the affairs of present and practical life, the imagination seizes upon the stores of memory, upon the suggestions of the organic processes within the body, and even upon the unsubstantial fancies of dreams and reveries past and gone. Of these it constructs phantoms and combinations and contrasts, absurd, brilliant, or trifling, as the case may happen. In truth, the inebriate mind is in a state very similar to the one occupied in trances, visions and somnambulism—of which, brief note has already been taken. The mind works subjectively—within itself exclusively. Illusions, hallucinations, and delusive beliefs, framed from the odds and ends, the *debris* of the past in thought and feeling, delight the roving and ethereal fancy.

And here a brief suggestion or two may be not unprofitable. The inconstant and elusive state of mind just described, is commonly attributed to the stimulating effects of alcohol.

(*a*) Alcohol appears to act as an excitant upon the heart and brain. This is, however, to some extent, deceptive. Alcohol is a poison; and when taken in considerable quantity, the whole organism is thrown into a tumult of action in the endeavor to rid itself of the dangerous intruder. The system is invariably prostrated when this work is done—showing that the extra work was at the expense of the system itself mainly, and not by the aid of allies or auxiliaries.

(*b*) The destruction of the sensibilities also operates as a pseudo-stimulant, by setting free, through anæsthesia, the body and mind, from irksome and laborious association with the material surroundings.

(*c*) Again, alcohol acts as a *quasi* stimulant by the seeming contradiction of its benumbing powers. In other words, alcohol paralyzes with peculiar emphasis, certain *restrictive*, or inhibitory nerve centers. It interferes with the monitors, the regulators of the imagination, and permits that faculty to roam without law or restraint.

These three primary or instant effects of alcohol, are they which prove so alluring to the inebriate. The neurotic partakes of alcohol with the object of obtaining the quickest and best relief from a great nervous agony or strain. The primary effects of alcohol fulfill the measure of this object perfectly. The point is to secure the instantaneous application of the first impressions made by the alcoholic agent. The motives actuating the inebriate, do not therefore reach to the secondary stages of drunkenness; nor, still less, to the last or tertiary stages.

In concluding what I have to say about the condition and responsibility of mind, when it is placed at disadvantage by alcohol, I will simply add this: There are certain lines that are common to alcoholic intoxication in all circumstances. But it is important to remember that psychologically, the mental and moral situations are radically different, in the several conditions of the inebriate constitution. In the primary stage of inebriety in a sound constitution, the imagination is vivid and bright (though erratic) and good fellowship reigns. In the secondary stage, the circulating fluid is filled with poisons other than alcoholic; the whole organism is in a quiver of anguish, while the mind is sullen, morose, hateful. In the third stage, when the brain, heart and glandular system have undergone profound physical degeneration, the mind is imbecile and degraded, but is comparatively harmless.

In conclusion, I will call attention to the fact, that intoxication is not the only bad outcome of the alcoholic influence; and also that it is not the result always the most to be deplored. Recent intoxication is supposed to be rather agreeable than otherwise. It excites the generous and sympathetic feelings. But when drunkenness is complicated by the presence, within the organism of subsidiary poisons contingent upon the prolonged use of alcohol, the spectacle is quite different. There are toxic principles in alcohol which are more destructive than those producing the state of simple inebriation. They are the fruitful sources of physical degenerations, both of the body at large and of the brain in particular, that are seldom the consequences of intoxication from opium, chloral, haschisch and other hypnotics. Indeed, alcohol is capable of producing all the degenerative injuries peculiar to the habitual inebriate *without* ever proceeding to the point of actual drunkenness. Dr. Maudsley expressly mentions "that more dangerous form of habitual indulgence in small quantities of wine and spirits throughout the day by which some active men of business endeavor to spur their overtaxed energies." To these poisonous properties of alcohol (which belong to few other intoxicants) the attention of the public should be directed. In that way only, can the true gravity of carelessly and ignorantly handling that most powerful but most pernicious agent, alcohol, become fully appreciated.

EUCALYPTOL IN DIPHTHERIA.

Read in the Section of Laryngology and Otology at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY MARION THRASHER, M.D.,

OF SAN FRANCISCO, CAL.

A diphtheria epidemic pervaded portions of San-Francisco during the winter months of 1891–92. It was most plentiful and virulent in that part of the city, where there was a stagnation of sewage. The writer was located in that quarter, and had ample opportunity for the practical study of this much dreaded disease.

Years ago California imported the Australian gum tree, the *eucalyptus globulus*, for shade, it being a tree of rapid growth. The inhabitants soon learned that it absorbed malaria and transformed unhealthy into healthy localities. The writer observed in the above epidemic, that diphtheria was rarely if ever found in houses surrounded by eucalyptus trees.

Eucalyptol is a powerful germicide, a disinfectant, a stomachic, a tonic, a stimulant and antiperiodic.

In small doses it produces mental activity, accelerates circulation and respiration, excites salivary secretion, promotes appetite, induces diaphoresis, and increases the elimination of urea.

It is expelled from the system through the mucous membrane of the fauces, trachea, bronchi, skin and kidneys. In short it possesses all of the characteristics that a remedy should possess to meet the requirements of the pathological conditions found in a typical case of diphtheria.

In diphtheritic inflammation the exudation being not only upon but within the mucous structure, the therapeutic action of eucalyptol, seems clearly indicated. The Löffler-Klebs bacillus fastens not only upon the surface but beneath it, and an agent to be effective must destroy it wherever found, and at the same time produce no injury to the healthy tissue in and upon which it abounds. Eucalyptol fills that requirement.

Its tonic and stomachic power overcomes anorexia and places the stomach in a condition to digest nutritious food, and fortify the system against the general depression of the vital organs so characteristic of this disease.

Blood-poisoning is early indicated in the saffron skin, which may be counteracted, if not overcome, by the administration internally of eucalyptol, bichloride of mercury and quinine. Cardiac weakness should be anticipated, by giving from the outset a generous diet of milk and eggs, supplemented hourly with brandy and digitalis.

Ventilation should be looked after, and everything in the sick chamber should be kept disinfected and scrupulously clean.

The writer uses a 10 per cent. solution of eucalyptol in pure alcohol, and applies the solution locally to the diphtheritic exudation, hourly day and night. In addition he gives it internally every hour with quinine, iron and bichloride. Dr. Forcheimer, of Cincinnati, in a very able article in the International Clinic, first called the writer's attention to eucalyptol in the treatment of throat affections.

The writer has abandoned the use of trypsin, papayotin, and peroxide of hydrogen, as membrane solvents.

The etiology and pathology of diphtheria, a malady so appropriately named "the enemy of childhood," was but little understood until recently. The ignorance of the medical practitioner was such, that every step he took only increased the gravity of the prognosis.

The erroneous idea, that the diphtheritic membrane was but a fungous growth upon the throat surface, only to be removed by cauterization, was followed by disastrous results.

No physician was dextrous enough to swab the throat, and touch only the diseased part, much less the inexperienced nurse, to whom the task was usually assigned.

This operation would be difficult enough, were the patient an adult, which was seldom the case, but when it was a crying, squirming, fighting child, is it to be wondered at, that the lunar caustic made dozens of blistering patches on the hitherto healthy tissue, on which the false membrane would further spread?

Need we be astonished that under such misconception of pathology and treatment the disease produced such an alarming mortality?

The fatality is greater among the children from three to five years of age for no other reason than from the fact it is so difficult, at this early age, to practically medicate the throat.

The writer has in a measure overcome the difficulty by forcibly compelling the child to swallow semihourly the eucalyptol solution, which passing over the diseased tissue accomplished what is affected in older children with the swab or gargle.

Unlike most other remedies, should it come in contact with the adjoining healthy mucous membrane, as it undoubtedly will, it will give tonicity to the parts and in addition render them antiseptic, thus preventing the spread of the exudation.

In conclusion, while the writer does not claim that eucalyptol is a specific for diphtheria, yet he believes its general use in the disease will show a decided diminution in its mortality.

TREATMENT OF ASIATIC CHOLERA

BY INTRA-AREOLAR INJECTION OF LARGE VOLUMES OF WARM SALINE SOLUTIONS, AND AN ABUNDANT USE OF HOT ACIDULATED WATER, TO THE EXCLUSION OF ALL OTHER DRINKS.

Read before the Kansas City Academy of Medicine, October 1, 1892.

BY SIMEON S. TODD, M.D.,
Emeritus Professor of Obstetrics and Diseases of Women in the Kansas City Medical College.

Those of you who are readers of The Journal of the American Medical Association may remember a publication of mine in that journal, No. 6, Vol. iii, 1884, entitled "A New Method of Treating Asiatic Cholera Proposed." This was followed two years later by a paper upon the same subject, read in the Section of Practical Medicine at the thirty-seventh annual meeting of the American Medical Association, and printed in the same journal in July, 1886.

The plan of treatment urged in these papers, to be brief, was to maintain the normal volume, blood-pressure and integrity of the blood, as far as possible, and to sustain cardiac and vascular activity during that period when, other measures having failed, the blood-vessels are being rapidly drained of their serum. This was to be done by copious injections into the areolar spaces of an artificial serum, to which might be added alcohol, spirits of ammonia or other stimulants. In aid of this, and for the purpose of dilution, to impart heat to the stomach, and thus stimulate functional activity in the neighboring viscera through the semilunar ganglia and solar plexus; for its germicidal or other antidotal effect in the alimentary canal, for its local astringent effect and, incidentally, to allay thirst, I proposed the use as a drink of large quantities of water, hot as may be borne, pleasantly acidulated with sulphuric acid—the draught to be repeated instantly and as often as rejected, and even forced upon unwilling patients. Ice, and cold drinks of every kind, were to be absolutely and wholly interdicted. These were the two leading features of a line of practice that at the time of my first publication I believed to be wholly new, and these means I then believed and now believe to be most valuable auxiliaries to any plan of treatment that may be adopted.

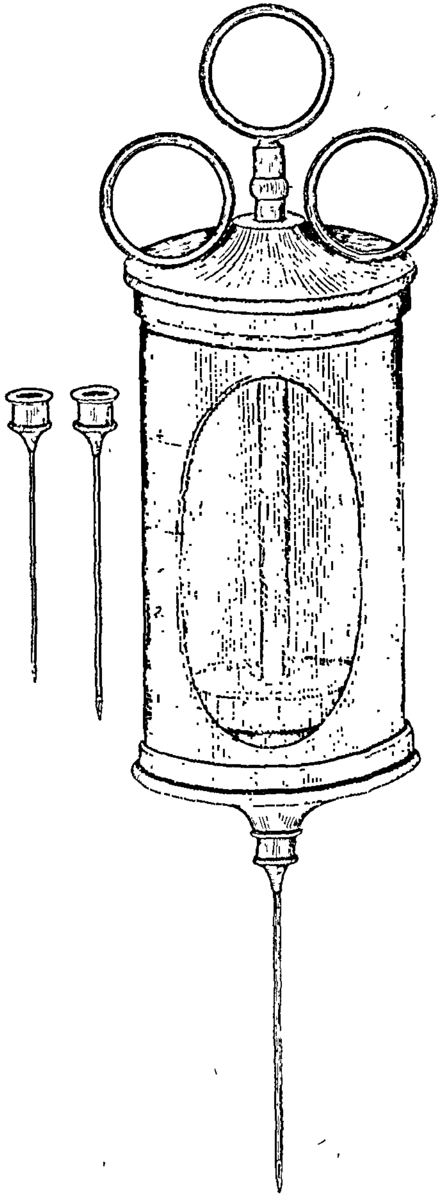
That the plan of treatment proposed by me was not wholly new I learned after the publication of my first paper, since it now appears from documents in my possession that as early as 1866 Dr. Cantani, of Venice, recommended "subcutaneous injections of *saline solutions*," and in the same year Dr. Beigel (*Lancet*, ii, pp. 352, 353) gives a case treated with hypodermic injections of warm water. The paper of Dr. Beigel was the report of a case of "complete collapse," in which hypodermic injections of "warm water to the extent in all, at first, of 7 ozs., were made into the calves, thighs and arms." As some benefit seemed to follow the measure, Dr. Beigel nade two further attempts, but the patient finally uccumbed. I need hardly say that not only was the uality of the fluid defective, as it was devoid of the aline constituents of the blood, but the quantity of luid injected in this case was too small to be of much ervice at any time, and absolutely useless in a case f "complete collapse." Dr. Cantani, as I did later, roposed to flood the circulatory system with saline olutions—"*injczioni sottocutanee di grandi quantita l'acqua salata tiepida.*" Again, in 1873, Prof. S. Samuel, of Königsberg, Prussia, published a paper n "Subcutaneous Infusion as a Method of Treating Cholera," in which he says that during an invasion f 1866 he "repeatedly injected substances into the calves and epigastrium." He does not name the 'substances" injected, but the inference is that drugs and the hypodermic syringe were used. His treatment, like that of Beigel, seems to have been without purpose, almost, and without value.

I did not expect to feel called upon to say anything further by way of introducing the proposed plan of treatment unless the disease should revisit this country. It is now lurking about our seashore, and no doubt with the return of warm weather will find its way to the interior by some one or more of the many avenues of entrance. Attempts at exclusion will fail, but measures of isolation and cleanliness, and personal prophylaxis, will limit the spread of the disease, lessen the number of those attacked and lower the death-rate, but will not hinder the epidemic from strewing its path with desolation and death, as former visitations abundantly show, if we are to rely solely on these safeguards and on former methods of treatment. For these reasons, and believing that the simple and rational suggestions of Cantani have not received ample trial, and that my own views as set forth in the two papers referred to, though gaining favorable comment in this country as well as abroad, have not received the attention they deserve, I am again impelled to affirm my continued and increased confidence in the proposed method of treatment, and again urge most earnestly the feasibility and reasonableness of these auxiliaries,and insist that they be given an early, hearty, vigorous and persistent trial in aid of whatever other means may be adopted.

One thing must not be forgotten if we would account for failure in the use of drugs. The pharynx, the œsophagus, the stomach and the intestines constitute the great route by which the poison of cholera enters the system. These organs are the first to feel the impact of the disease, and are chief among the sufferers. The changes in these structures begin early, and many times progress with wonderful rapidity—a rapidity proportioned to the quantity of poison finding entrance, perhaps, rather than the quality of the infecting matter, for we must suppose the *quality* of the morbific agent to be constant. The most deadly poison known, animal, vegetable or mineral, is absolutely harmless when greatly diluted.

What are the post-mortem findings? The venous side of the circulation is found in a state of intense engorgement, the vessels of the arterial system being comparatively empty. This engorgement of the veins is especially marked in the abdominal cavity, those which unite to form the portal vein and the portal vein itself being filled with dark, viscid blood. The urinary tract also suffers, but it is in the alimentary canal where the most destructive changes are wrought. The entire lining membrane is in a state of maceration. The pharynx, the œsophagus, the stomach, and small intestines especially, will be found denuded of patches of epithelium, and their villi exposed, or covered with mucus and partly detached fragments of epithelium.

These lessons from the dead-room show the danger of delay, and the utter futility of giving, by the stomach or rectum, drugs or fluids of any kind with the hope of having them absorbed, except in an early stage of the disease, or where but a small quantity of the poison has been taken into the stomach. Medicines by the stomach and rectum are alike rejected, or remaining, are not absorbed. As a consequence the discovery of hypodermic medication was hailed with much satisfaction as the epidemic of 1865–1866 made its approach, and the use of drugs by the hypodermic method and with the hypodermic syringe was everywhere resorted to, but with indifferent success, it must be said, except in mild cases and at an early stage of the disease, for the relief of pain. One obstacle stood in the way of success—the waste of the fluid part of the blood, with its salts, and the gradual clogging of the blood-vessels with the more solid parts of the blood, leading at the last to cessa-



tion of heart action for the want of the stimulus of repletion. All who have had experience with the disease will remember to have noted the wonderful outpouring of serum from the stomach, the bowels and the skin, as the disease approaches the algide stage.

The significance of these blood changes was early and duly appreciated, and when the visitation of 1831–1832 came about, some method of preserving fluidity of the blood had long been reckoned a desideratum. The practice of transfusion of blood had come into vogue, and from the transfusion of blood in a case of hæmorrhage to the transfusion of an artificial serum was a short step. From the year 1832, to and including the year 1873, sixty-eight papers on the subject of intravenous injections of saline solutions had been published, as shown by the laborious researches of Dr. John S. Billings, Asst. Surgeon U. S. A., in his report on the bibliography of cholera made in 1875 under the direction of the Surgeon-General of the Army, and published by Act of Congress. Of these thirty-seven, or more than one-half, were published as early as 1832. Many of these papers were reports of cases treated by this method. Some startling results were had in the hands of clever operators, even in cases of profound collapse, but the skill needed to make the injection with safety is such that the method will hardly ever meet with public favor. So cautious, indeed, were the physicians of our own country, and so doubtful of success, it may be, that two or three trials of the method only had been reported in the United States down to and including the epidemic of 1873.

Following on the heels of intravenous injection and the ushering in of hypodermic medication, the idea of intra-areolar injection of large quantities of an artificial serum was an easy and natural conception, and thus it was that in 1866 Cantani published his monograph on subcutaneous injections of warm saline water. The plan received little or no attention at the hands of the profession. He had no followers, strange as it may seem, save in the aimless and faltering manner of Dr. Beigel, and the suggestions of Dr. Cantani passed from memory. Down to the date of my first paper, in 1884, nothing further was heard of subcutaneous injection of warm saline solutions in great quantities for the purpose of replacing the wasted serum.

Here therapeutic measures rested at the time of my first publication. During the last epidemic, 1873, the means commonly employed hardly differed in the least from the means employed in 1832. Opiates, astringents, stimulants and the various acids were used in mild cases, and in the earliest stage of the disease in all cases. As the stage of collapse approached the quantity of stimulants by the stomach was increased, only to be rejected. Hypodermic injections of morphia, with alcohol or ammonia in some of its forms, friction, hot baths and other hot surroundings were resorted to with persistent purpose, but the feebleness of despair. During all of this period, with amazing incongruity, the patient was freely given ice and iced drinks to allay the implacable retchings and insatiate thirst. Intravenous injection of an artificial serum, the only measure that had given promise of success in collapse, was in the hands of the few—not used once perhaps in every one thousand cases. Subcutaneous injection with the purpose of replenishing the depleted blood-vessels seems never to have received a thought.

The universal and fatal error committed in allowing ice and iced drinks finds no rational explanation but in an apparent sense of hopelessness on the part of physicians and nurses, and the promptings of a humane desire to please the patient to the end. These things, so grateful to the patient, are craved in a most piteous manner, difficult to withstand, but certainly nothing can be conceived of in the way of drink more irrational or more deadly. And yet, in all of the voluminous cholera literature of the last sixty years, there has not come to us an authoritative remonstrance against the practice—not even a hint that the stomach, and that great nerve center in its neighborhood, the semilunar ganglia and solar plexus, need to be warmed into physiological activity with hot drinks rather than chilled into utter inaction with ice.

Then again, let it be remembered that from 1814 down to the present time, during the intervening epidemics and covering a vast field of observation, the prophylactic and therapeutic value of the acids, and especially the sulphuric acid, had again and again been demonstrated beyond question, and yet it has never once been authoritatively suggested, from the date mentioned down to the present time, that copious draughts of hot water pleasantly acidulated with sulphuric acid should wholly supplant the use of ice and cold drinks. That it should be necessary to press upon the attention of the profession so earnestly the measure of introducing into the areolar tissues large volumes of artificial serum at a time when the absorbents are still active, and at a yet earlier period warm the rapidly cooling stomach with hot acidulated water—means so simple, so available and so rational, is a matter of no little wonder. So simple and self-suggestive are these means that it may happen that I shall be met with a denial of their novelty, but the facts are as indisputable as they are remarkable.

It must be noted that in all cases of much severity that concurrent with the destructive changes taking place in the alimentary canal, the vaso-motor nerves of the parts supplied by the solar plexus and the abdominal branch of the right pneumogastric suffer a paresis. From the open mouths of the capillaries are poured forth torrents of serum. The current is toward the mucous surface of the stomach and intestines, and as before stated, there can be no absorption from the alimentary canal when this outpouring has been set up. If then there has been failure to arrest the disease at an earlier period with the use of dilute sulphuric acid, opiates and stimulating astringents, and vomiting and purging continue, with thirst, the stomach and entire alimentary canal, if possible, should be flooded with draughts of water pleasantly acidulated with dilute sulphuric acid, and as hot as can be borne. These draughts are to be given *nolens volens*, as often as every five or ten minutes if rejected, but less frequently if retained: At the first appearance of coldness of the hands and feet, if the vomiting and purging continue, in conjunction with the hot drinks injections must begin, while yet the circulation is little impaired and the absorbents are active. Large volumes of saline water of the temperature of 100° F. are to be thrown slowly into the loose areolar tissues at all available points of the *trunk* from a syringe of large size. The needle should be inserted at many points on each occasion, if the quantity of fluid needed be considerable; a matter to be determined in each case by the condition of the subject and the amount of serum being lost. If done early, from one to four quarts of fluid I am sure may thus be thrown into the blood channels, if needed, within the space of an hour, and must be repeated again and again as occasion may demand. Dr. T. Weatherill (*Lancet*, 1832, ii, pp. 688–689) related a case in which 480 ozs.—3$\frac{3}{4}$ gallons—were injected into the *veins* with success. To this artificial serum may be added alcohol, carbonate of ammonia or other adjuvant.

When my first paper appeared it called forth some comment from the medical press, and some objections were raised. No one thought the practice would prove hazardous, but some objected under the belief that a quantity of fluid sufficient to serve any valuable purpose would not be absorbed—an objection without validity except when the measure is resorted to in unfavorable conditions, as in complete collapse, when absorption would be slow indeed, and perhaps wholly suspended. A more weighty objection is found in the possibility that no artificial serum can supply the physiological place of the lost serum of the blood. Even this objection, however, loses much of its force when we remember the readiness with which the organism conforms to new conditions, as seen in the transfusion of blood, but in a more marked manner in the successful transfusion of so incongruous a fluid as milk.

After a somewhat critical examination of the subject I am prepared to suggest the following as a good, if not the best, formula for the injection fluid: ℞. Sodii chlor., ʒjss; sodii sulph., ʒjss; potass. chlor., grs. viii; sodii phosp., grs. v; sodii carb., grs. xxxij; alcoholis, fʒiij; aq. dest. q. s. ad., f℥xxxij. This is a modification of the fluid used in intravenous medication and known as Little's solution, of which, however, the sodium sulphate is not a constituent. A convenient form for ready use would be a strong, filtered solution, preserved in well-stoppered two-oz. bottles, each containing enough to make one quart of the injection fluid when added to a sufficiency of recently distilled water. A very neat, nicely adjusted and close-fitting four-oz. syringe, with three needles, has been made for me, according to instruction and design, by George Tiemann & Co., 107 Park Row, New York, of whom it may be had. The instrument should be thoroughly rinsed in a 5 per cent. solution of carbolic acid before and after using.

Now this paper, since it is to be published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, will have wide circulation, and in order that it may fulfil its mission, and the method of treatment suggested on trial be rated fully at its merits, a word more must be said respecting the manner of its execution. A disease that carries off its victims in twenty-four hours, and sometimes in four or five, cannot wait for the slow-coming feet of the slothful, nor the hesitating hand of the unready. Its management requires generalship. The physician must have power to command himself, and command unquestioning obedience on the part of others. Milder measures having failed, the treatment here enjoined must be followed with unflinching purpose and be rigidly enforced on all who are about the patient. Do not despair of saving your patient, but press your efforts even to the jaws of death. If in deep collapse from lack of early treatment, and the fluid be not absorbed from the cellular spaces, thrust the needle into the median basilic or median cephalic, or other accessible vein in the arm or leg, and practice intravenous injection. The operation will probably be quite as free from danger with my syringe made for intra-areolar injection as if done with a more elaborate appliance. It can be done in a few moments by a dexterous hand, and only requires that all air be expelled from the needle before inserting it, that the injection be made slowly, and that the syringe be not completely emptied. About one in every six of the cases tried have recovered from deep collapse under intravenous injection, if the reports are to be relied on.

Now it may be asked just here, what advantage the proposed plan of intra-areolar injection has over intravenous injection of saline solutions; and the answer is, that by the intra-areolar method the fluid is introduced at many points, distant from each other, and slowly and by a sort of filtration through many small and diverse channels, enters at last the ascending and descending venæ cavæ and reaches the heart in a gradual way. Owing to the means, too, by which the fluid reaches the large venous trunks, there is no danger of the entrance of air. The same things cannot be said of intravenous injection, for the fluid is thrown into a vessel of considerable size, and unless done with great caution, may endanger fatal engorgement of the heart if that organ happen to be nicely balancing between action and rest. It also endangers entrance of air and, what is by no means impossible, embolism, from the wounded vein. These considerations point out one other great advantage of the intra-areolar over the intravenous method. The first can be used with safety, even by the unskilful, who are many, but the other must be relegated to the skilful, who are few.

That the plan of treatment I advocate will greatly lessen the fatality of the disease I believe—that it may fall short of my expectations is possible. The most that can be said against it, perhaps, is that it is untried, and the same has been true of every successful remedy in medicine and every valuable appliance in surgery till their merit had been proved by trial.

It will be seen that I have omitted discussion of the cause, the mode of propagation, the symptoms and pathology, the prevention, and all details as to treatment, except so far only as has been necessary to illustrate the innovating methods herein set forth. It may not be amiss, however, if I give here a simple and palatable formula for the use of the well-known remedy, sulphuric acid, as a personal prophylactic for those who are being actually exposed to the danger of infection: ℞. Acid. sulph. dil., fʒij; spts. vin. gal., f℥ij; syr. aurant. f℥viij. M. Sig. A tablespoonful half an hour before, and two hours after each meal, in a half tumbler of water.

The supreme value of such prophylactic measures for those who are exposed, and the priceless advantage gained by interception of the virus on its way to the intestinal canal, and while yet in the stomach, must be borne in mind if we would discharge the duty our profession imposes. It may not be out of place if I say, in conclusion, that much of the contents of this paper is based on observations made during the prevalence of the epidemic of 1848–1849, and of 1866, in both of which the writer bore an active part.

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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(*Continued from page 502.*)

Case 27.—Archives of Otology, September, 1880.—Treated by J. Michael, of Hamburg. Left ear. Chronic otorrhœa. Years ago received a blow on left side of head; insensibility for a few hours followed; in a few days recovery occurred, with an occasional pain on the left side of the head. He has had a discharge from both ears, and been rather deaf for the last two years.

Nov. 10, 1877. Violent headaches, starting on left side. He has a feeling of pressure, feels stupid and has slight aphasia. He lies in bed with his head drawn somewhat downward into his neck; his face is red; pupils sluggish; constipation; no fever; aural polypi in both ears; removed; syringe; calomel and ice bags; no improvement.

Nov. 16. Spasms and unconsciousness. Stiff flexion of all four extremities. Then followed delirium, stupor, sensitive skin; pain upon moving back. Death.

Autopsy.—A yellowish projecting spot existed somewhat above the surface of the dura-mater, over the crista superior of the petrous bone. This corresponded to the site of the injury. The pia-mater at the convexity covered with pus. Abscess in left temperosphenoidal lobe. The ventricle was filled with pus. An opening existed outward from the corpus striatum, communicating with the abscess. Temporal lobe largely broken down with purulent degeneration. The frontal lobe œdematous and softened. The right lateral ventricle, as well as the third and fourth, was filled with a purulent fluid. The pia-mater at the base charged with pus. This extended down the vertebral canal. Both mastoid cavities were filled with pus.

Case 28.—Lancet, May 28, 1880. Treated by Henry Morris. Male, age 31. Left ear. Chronic otorrhœa, deafness, pain, red mastoid, chills, unconsciousness. Mastoid opened, temporary improvement, then pyæmia, herpes on face. Death.

Autopsy.—Thrombi in left lateral sinus and jugular vein.

Case 29.—Archives of Otology, September, 1880. Treated by Eugene Frankel. Female, age 23. Left ear. Chronic otorrhœa, acute exacerbation, meningitis. Death.

Autopsy.—Pus in tympanum; opening through drum-head; thrombo-phlebitis of transverse sinus; abscess in sub-dural space and in left temporal lobe; purulent lepto-meningitis of the base and the convexity.

Case 30.—Archives of Otology, September, 1880. Treated by Eugene Frankel. Male, age 22. Right ear. Chronic otorrhœa, appearance of cerebral symptoms after a knock on the head. Death.

Autopsy.—Pus in tympanum, no perforation of drum-head, incus gone. Caries of petrous bone, through roof of tympanum. Abscss in right temporal lobe, encapsulated. Thrombo-phlebitis of right transverse sinus.

Case 31.—Archives of Otology, September, 1880. Treated by Eugene Frankel. Female, age 28. Chronic otorrhœa. Right facial paralysis, vomiting, retained urine, dilated pupils, mastoid not opened; coma. Death.

Autopsy.—Pus in tympanum, perforation of drumhead. Caries of roof of tympanum and of ex. aud. meatus. An inspissated exudation compressed the facial nerve in the Fallopian canal. Purulent basilar meningitis; abscess in right temporal lobe, encapsulated. Mastoid sclerosed.

Case 32—Archives of Otology, September, 1880. Treated by Eugene Frankel. Male, age 53. Left ear. Chronic otorrhœa, polypus, removed, headaches, mastoid opened, meningitis. Death.

Autopsy.—Epithelioma of left ear, with destruction of most of the temporal bone. Purulent basilar meningitis.

Case 33.—Archives of Otology, September, 1880. Treated by Eugene Frankel. Female, age 3. Left ear. Pebble in left ex. meatus, attempt at removal, meningitis. Death.

Autopsy.—Drum-head gone. Pebble in middle ear, pus in middle ear. Purulent meningitis of the convexity.

Case 34.—American Journal of Otology, No. 3, 1879. Treated by J. Orne Greene. Otitis media, polypus, vomiting, pain, convulsions. Death.

Autopsy.—Carious destruction of vault of tympanum. Perforation of dura-mater near transverse sinus. Abscess of temporal lobe.

Case 35.—Lancet, 1878, vol. I, No. 20. Treated by G. C. Gribbon. Male, age 22. Right ear. Chronic otorrhœa, drum-head destroyed, violent headache, nausea, paresis of lower extremities. Death.

Autopsy—Abscess in right lobe of cerebellum. Caries of petrous bone at the internal auditory meatus. Pus in mastoid cells.

Case 36.—Archives fur Ohrenheilk., vol. xix, No. 4, page 245. Treated by K. Burkner. Male, age 36. Right ear. Chronic otorrhœa, pain in ear and head, deafness, diminution of discharge, convulsions, delirium, coma, œdematous swelling over superior boundary of mastoid muscle, a probe passes through posterior superior wall of external meatus, reaches carious cavity. Death.

Autopsy.—Necrosis in tympanum and external meatus. Dura-mater in region of temporal bone is injected, thickened and covered with pus.

Case 37.—Archives fur Ohrenheilk., vol. xix, No. 4. Treated by K. Burkner. Male, age 20. Left ear. Chronic otorrhœa (bilateral), sudden pain in left ear, cessation of discharge, chills, vomiting, vertigo, high fever, a thrombus felt in the left jugular, pain in neck, apathetic condition, left mastoid red and swollen, facial veins enlarged. Death.

Autopsy.—Thrombi in transverse sinus and in bulbous venæ jugularis. Red points and minute holes in the thin jugular fossa.

Case 38.—Archives fur Ohrenheilk., vol. xix, No 4. Treated by K. Burkner. Male, age 17. Left ear. Acute purulent otitis, left facial paralysis, granulations in middle ear, removed, improvement; some weeks later had sudden pain in ear. Discharge stopped, return of bad symptoms, contraction of left pupil, nystagmus of both eyes, somnolence, total deafness of left ear, paresis of left leg, paralysis of left abducens, pain in all branches of the trigeminus, vomiting. Death.

Autopsy.—Pus around chiasm. Anterior extremity of left lobe of cerebellum is adherent to the posterior margin of the temporal bone. Abscess in left pons. At the superior border of the temporal bone, are three small carious openings, communicating with an irregular cavity, involving the entire posterior portion of the temporal bone. This cavity is filled with a greasy, shining, yellowish-white mass, which infiltrates the posterior wall of the temporal bone, just above the sigmoid sulcus, and is also connected with the vestibule. The ossicles are gone. Internal ear destroyed by gelatinous mass.

Case 39.—American Journal of Otology, April, 1881. Treated by E. G. Loring, of New York City. Male. Middle age. Right ear. In April, 1878, he consulted Loring with influenza, poor hearing, closure of Eustachian tubes. Recovered. December, 1878, had a similar attack. Recovered. December, 1879, had frequent similar occurrences. April, 1880, pain in ear and side of head, acute catarrhal otitis. Improvement. A few days later had severe pain again. Delirium, drum-head punctured, no pus. Death.

Autopsy.—Dura-mater intensely congested at the roof of the tympanum. Sero-purulent exudation in sub-arachnoid space. This exudation extends from the longitudinal fissure down upon the side of the brain. Pus in upper surface of right lobe of cerebellum. Pseudo-membrane in tympanum.

Case 40.—Archives der Heilkunde, vol. ii, page 295. Treated by H. Wendt. Male, age 49. Right ear. March 13, 1869, consulted Wendt. Tinnitus aurium, pain, deaf. March 30. unconsciousness, convulsions. Death.

Autopsy.—Basilar meningitis.

Case 41.—Archives der Heilkunde, vol, ii, page 295. Treated by H. Wendt. Male, age 52. Right ear. Caught cold, acute catarrhal otitis, perforation of drum-head, pain and tinnitus aurium. Found dead in bed.

Autopsy.—Diffuse meningitis.

Case 42.—Archives der Heilkunde, Vol. ii, p. 295. Treated by H. Wendt. Traumatic inflammation of middle ear; death.

Autopsy.—Basilar meningitis.

Case 43.—Service of E. de Rossi, of Rome. Female, age 57. Left ear. September, 1880, had malaria, went to the hospital. Three weeks afterwards had tinnitus aurium in the left ear, no pain. Acute otorrhœa. February 1881. Left side of neck swelled. March 2. Swelling incised and pus evacuated. March 3. Swelling increasing, painful to pressure, pus comes from meatus on pressure of swelling. Polypus in middle ear; middle ear is also connected by a sinus with the swelling. An attempt to open mastoid was made, but extreme sclerosis prevented. Chills; death.

Autopsy—Coagulated blood in left sinuses, localized meningitis, clot in jugular vein, caries of atlas and second vertebra, pus in cavum tympanum, occipital condyles carious, pus in mastoid cells. Carious opening in posterior walls of mastoid antrum, communicating freely with sigmoid sinus. Transverse sinus surrounded by pus.

Case 44.—Service of E. de Rossi, of Rome. Female, age 18. Right ear. Chronic otorrhœa. January 6. Pain in ear and side of head; fever. January 9. Came to the hospital. Deafness; tympanic granulations removed. Improvement. Headache, fever, exophthalmia, ptosis. Violent pain in head, painful swelling over mastoid muscles. Coma, death.

Autopsy—Dura mater adherent to the bone. Pus in subdural space, corresponding with the inferior side of the frontal and sphenoidal lobe and the anterior margin of the right hemisphere of the cerebellum. Pus covered the trigeminus and acoustic nerves. Dura mater at base of skull covered with pus; superior petrosal sinus, inferior cavernous sinus and transverse sinus filled with pus.

Caries was found in that part of the base of the skull which corresponded with the tegmen-tympani. Pus in tympanic cavity. The pus had burrowed laterally in the subdural space to the entire extent of the right lobes of the cerebrum and cerebellum. Several of the large veins which opened into the longitudinal sinus showed thrombi; thrombus in longitudinal sinus; abscess in the inferior posterior side of the frontal lobe.

Case 45.—King's College Hospital Reports. Treated by Urban Pritchard, of London. Male, age 23. Left ear. Chronic otorrhœa. Frontal headache, pain in left ear. April 1889. Caught cold; increased discharge and pain; several attacks of unconsciousness, with loss of speech. June 17. Convulsions; twitching of left side of face; semiconsciousness; fits. June 23, 1889. Came to hospital. Drowsy, incoherent. Tenderness on pressure, most marked about two inches above meatus. Slight facial paralysis. Operation June 23, 1889. Skull trephined at a spot about 2 inches above, and ½ inch in front of the meatus; no pus. Trephined again 1 inch behind the original opening. Pus found outside of dura mater. Trephined again over occipito-parietal region; no pus. The dura mater was at all times left intact. The whole wound was thoroughly irrigated and dressed antiseptically. Recovery. Occasionally has short attacks of aphasia.

Case 46.—King's College Hospital Reports. Treated by Urban Pritchard, of London. Male, age 26. Left ear. Chronic otorrhœa. Pain in the ear, and swelling of left side of neck. September 7, 1889. Intense pain in ear and side of head; chills; vomiting. September 11. Came to hospital. Intense pain in head, focussing in left temporal fossa; dizzy; polypus in middle ear. September 14. Temperature 101°. Delirium, vomiting, twitching of left eyebrow and angle of mouth. September 16. Retention of urine; semi-conscious. Operation. Trephined 1½ inch behind the meatus, and the same distance above the cerebral base line; pus evacuated, brain débris removed. Wound irrigated, drainage tube, antiseptic dressings. Improvement, delirium, chills. September 24. Wound re-explored, no pus; mastoid opened, no pus. September 26. Paralysis of right arm and leg. September 30. Optic neuritis, left eye. October 2, the track of the drainage tube was freely dilated; pus escaped. Slow recovery; still has chronic otorrhœa; has had two attacks of unconsciousness since discharge, and once some aphasia.

(*To be continued.*)

DR. J. COLLINS WARREN, of the Harvard Medical School, has accepted the executive presidency of the Section on Medical Pedagogies of the Pan American Medical Congress.

LUMBRICOIDAL OBSTRUCTION.—The *Doctors' Weekly* states that Dr. John Wyeth, of the Mount Sinai Hospital, New York, had a case of intestinal obstruction upon which he operated and removed a mass or entanglement of lumbricoids, eighteen in number; some of the worms were seven inches long. The patient did well after the operation and recovery is seemingly assured.

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SATURDAY, OCTOBER 29, 1892.

PROTECTIVE VACCINATION AGAINST CHOLERA.

It is generally admitted that the discovery of the cholera bacillus has given the profession a certainty in the diagnosis of sporadic cases of cholera, which we could not possess without it. Indeed, the importance of the search for the cholera bacillus is emphasized by the latest report by GUTTMANN from the Berlin cholera hospital, who proved by the detection of the specific germ, that apparently inoffensive cases of diarrhœa may really be mild attacks of genuine cholera. While it is evident that bacteriological advance has thus increased materially the efficacy of prophylactic measures, it cannot be claimed that it has as yet aided the therapeutics of cholera. Reports from various sources, however, indicate that the problem of protective vaccination against cholera is nearly solved.

The first efforts to immunize animals against infection with cholera bacilli, or against poisoning by their products, were reported by BRIEGER, KITASATO and WASSERMANN. Theoretical reasoning led these investigators to the experiment of growing various pathogenic bacteria in infusions of the thymus gland, or at least mixing pure cultures with this infusion, in the hope of reducing the bacterial toxicity. This expectation was realized, and such cultures, rendered less poisonous by the influence of the thymus extract, proved efficient protective vaccines against inoculation with the more virulent bacteria in tetanus, diphtheria, typhoid fever, erysipelas and cholera.

If a culture of cholera germs grown in thymus broth is heated to 65° C. for fifteen minutes, it becomes harmless to guinea pigs, but after twenty-four hours protects the animals against inoculation with twice the fatal amount of virulent bacilli.

Meanwhile researches with a similar object in view had been carried on by HAFFKINE in PASTEUR'S laboratory. This author found that he could modify the virulence of the cholera germs by special modes of culture. By growing them in broth at a temperature of 39° C. with steady aeration, he could diminish their toxicity to animals. On the other hand, by passing the virus through a series of guinea pigs by intra-peritoneal injection, the virulence was intensified. The former variety, introduced under the skin of animals or man, gave rise to localized swelling and œdema, and some febrile reaction. The intensified virus produced a more serious local reaction and even necrosis of the tissues, but *not if preceded by inoculation with the weaker virus six to eight days previously*. An animal that has passed through these two vaccinations is now proof against the ordinarily fatal injection into the peritoneal cavity. HANKIN describes in a recent number of the *British Medical Journal* the effects of such a vaccination on himself and others under the direction of HAFFKINE. There is, however, no direct proof as yet that these procedures protect man against the natural mode of cholera infection, although the analogy with observations on animals, as well as the tolerance to subsequent subcutaneous introduction of cholera virus, render this a probable presumption.

HAFFKINE'S method has been tested by the now famous journalist STANHOPE, who then exposed himself as cholera nurse without precautions in the Hamburg hospital, and even drank the suspected Elbe water. Yet such a sensational experiment cannot be of much scientific value. Since cholera does not attack every person exposed to it, his escape is not a decisive proof of the efficacy of the vaccination, while if the man had succumbed it would only have shown that the method is as yet not infallible.

A more definite proof that it is possible to render man refractory against cholera infection has been furnished by G. KLEMPERER, of Berlin. Two years ago BEHRING discovered that the serum of an animal artificially immunized against diphtheria could neutralize the toxic products of the diphtheria bacilli; virulent diphtheria cultures can thus be rendered harmless by mixture with a sufficient quantity of serum from an immunized animal. On the other hand the injection of such serum under the skin of a fresh animal protects the latter temporarily against a subsequent inoculation with diphtheria cultures. The anti-toxic effect of the serum depends on its quantity and upon the degree of immunity conferred upon the first animal. This discovery of BEHRING'S of the specific anti-toxic properties of the serum of immunized animals has since been found to apply also in many other bacterial diseases against which immunity can be obtained—as tetanus, pneumococcus poisoning, typhoid fever, erysipelas and some others KLEMPERER has ascertained that this is also the case in cholera.

He reasoned therefore that if a vaccination is to protect against cholera it must give the serum of that individual the property of neutralizing the poisons produced by cholera germs. For this had been positively shown by his experiments on animals.

Since epidemiological experience has shown not all persons are apt to contract cholera he tested in the first place whether the blood of non-vaccinated persons ever possesses anti-toxic properties. In two instances out of five venesections he found that one to two centimetres of serum *were sufficient to protect* guinea pigs against cholera inoculation. His most important object viz.: to compare with this normal state of affairs the anti-toxic power of the blood of cholera-convalescents, he had not had opportunity to attain at the time of writing.

By inoculating a human being with cholera cultures heated to 70° C. for two hours by means of subcutaneous injections given eight successive times during 12 days, he obtained a high degree of immunity as manifested by the anti-toxic properties of the blood. A quarter of a cc. of this serum was a sufficient protection to guinea pigs. But the time and number of the injections required would deprive the method of its practical value.

By varying the method in very cautious trials on many students and colleagues, KLEMPERER finally learned that the living cholera bacilli so terrific in their power when introduced into the bowels, are relatively harmless when put under the skin of man. A severe but not dangerous local reaction and some fever follow the injection, but the bacilli are evidently killed by the organism. Within three days after the infection of .35 cc. of a liquid culture of cholera bacilli of full virulence a high degree of immunity was found established.

It is but justice to add that these results obtained by competent observers and by means of precise methods confirm on the whole the claims of FERRAN who alleges to have protected numerous persons by cholera vaccinations eight years ago. FERRAN'S methods were not *sufficiently precise*, *nor were they* revealed to a sufficient extent to convince the profession of the reliability of his claims.

INEBRIETY AMONG WOMEN IN THIS COUNTRY.

The *British Medical Journal* gives a startling picture of the increase of inebriety among women in England, and also in other parts of the world. The number of women convicted of drunkenness in England and Wales, rose from 5,673 in 1878, to 9,451 in 1884. Last year 33,000 females were convicted of drunkenness in the United Kingdom. In London in one year the increase of convicted women was 500. In Glasgow 10,500 women were sent to prison. Of this number 450 were sent to jail from six to thirty-four times during the year. In Ireland the champion female inebriate record-breaker has been arrested over 700 times, and is yet less than 40 years old. One woman was sent to prison fifty-two times during twelve months. The proportion of women arrested was formerly seven men to one woman; now it is three men to one woman. The ages of these offenders range from 12 to 60.

These figures are so appalling as to be called a "*National shame*" by the daily press. Such persons do not come from the lower circles alone, but represent all classes and conditions of society. Twenty years ago women were not seen in the bar-rooms; now they are very common. The editor thinks that this increase of inebriety extends to all civilized countries in proportion. Unfortunately, we have no statistical studies of the number of women who come under police notice for inebriety. The partial records of a few large cities show a decline of inebriates among women, and these are among the lowest class of foreigners. Some authorities are confident that opium and other drug inebriates are increasing among women. There are probably many good reasons for this belief, especially among the middle and better classes of society. Such reasons are based on the individual observations of family physicians, and not on any statistics that can be gathered. Persons who have had large experience in institutions for inebriates, where they would naturally hear or be advised of such cases, are agreed that the number of alcoholic women among inebriates is very small comparatively; also that such cases merge more quickly into acute forms of delirium and melancholia, and disappear from the homes and the street. It may be safely asserted that the American woman cannot constitutionally use any form of alcohol as her foreign sisters use it. She has a more acute nervous organization, and the brain centers are more unstable; the surroundings are full of psychological factors that keep up a certain nerve tension, which antagonizes the sudden increased heart's action from alcohol. The brain suffers from the strain of alcohol, which gives no pleasure. The American women of all classes want rest, not increased excitement, hence they seek this more naturally in narcotics. There are other physiological reasons why alcohol is not used by women in America. From heredity and many other conditions, with surroundings and predisposing causes, inebriety will be found among women, but it will be of shorter duration in this country. It will be a symptom more than a disease; a symptom of brain and nerve failure, of rapid degeneration, that quickly takes on other forms. The American woman will never be a record-breaker for arrests for inebriety.

As a drug taker or an opium inebriate the same rapid fatality follows. As a periodical drinker, profound neuroses come on and the drink craze changes. The *British Medical Journal* urges very wisely, that this "National folly" of arresting and sending to jail these poor victims, should cease. A new departure is demanded, and they should be recognized as diseased and sent to hospitals, under the care of physicians. A long residence in such a hospital would be an experiment that would be infinitely more humane, hygienic and economical, and fraught with the most important results to both the race and civilization. The practical point for our American physicians is to take up the subject of inebriety and study it as a purely medical topic, and not leave it to police courts and moralists to point out the evil and its remedies. The British public are alarmed at the extent of the evil, and cast about wildly for help. If the medical public had made this a scientific study, they would long ago have pointed out the means of prevention and cure.

The same thing is repeated here. The drink problem including both men and women, and the use of all narcotic drugs, are studied by moralists and non-experts. and the medical profession, to whom it rightly belongs, "pass it by on the other side." Both alcoholic and opium inebriety have already invaded our cities, neighborhoods, and even our homes, and the pledge, the prayer, the police court and punishment are the only remedies we can offer. Moral, religious and knavish quacks offer all sorts of specifics, but the evil goes on unchecked. The time is coming when the medical profession will teach the world the causes and remedies for this great and widespread evil of the century.

FIXATION OF THE SHOULDER IN THE TREATMENT OF DISLOCATION.

SURGEON-MAJOR HAMILTON, of the British Army, has made use of inelastic webbing to obtain fixity of the arm and shoulder. His method has been found effective in the dressing of a dislocation upward of the outer end of clavicle. According to the *American Practitioner and News*, July 30, the steps of the process of MR. HAMILTON are: first, the surgeon places a very large pad in the axilla of the affected side, and then passes around the arm of that side and so on around the body a piece of soft inelastic webbing about 1½ inch wide; this band is made to overlap 3 inches. The ends are held by stitching. Another piece of the same webbing is stitched at the back to the body-belt; brought firmly over the point of luxation, over which is placed a pad secured in place by stitching to the underside of the second strip; then made fast by sewing to the body-belt in front. In order to maintain downward traction, a perineal band is made to pass from the body-belt behind to a buckle attached to the same in front. The hand and forearm must be carried in a short sling. It is only necessary to unbuckle the perineal band when the patient goes to stool. MR. HAMILTON finds that this apparatus furnishes an absolute fixity of arm and shoulder.

NAVAL SURGEONS VOLUNTEERING FOR MILITARY HOSPITAL DUTY.

In the recent civil warfare in Venezuela some of our naval surgeons have done honorable and humane emergency service. After the skirmishes that took place near La Guayra a considerable number of revolutionists, though badly wounded, were without any surgical aid. Some of them lay for hours without even a primary dressing for their wounds. This state of affairs having come to the knowledge of the American (United States) naval officers, Medical Inspector TYRON, of the Chicago, went to the front and organized a hospital service at Macuto. He was assisted by two junior surgeons of the Chicago, and by the surgeons of Spanish, English and German ships in port. The men whom they went to serve had neither surgeons nor supplies.

DR. TYRON and his staff were obliged to find their own instruments, bandages, appliances and medicines. One of the surgical staff of the Chicago, remained at the hospital every night. Some of the operations, such as resections at the hip and shoulder, required constant supervision; gangrene was not wanting in two or three cases to complicate the surgeon's duties. All honor to the Chicago's staff, and to their humane colleagues!

EDITORIAL NOTES.

KING'S COLLEGE, LONDON.—This institution, best known in this country by reason of being the field of Sir Joseph Lister's later labors, is also one of the centers of post-graduate instruction. It is there that the lectures and laboratory tuition of Professor Cruikshank are given in bacteriology. It was there that Sir Thomas Watson and Budd, Ferrier, George Johnson and Playfair have wrought and pursued their respective investigations beneficial to progressive medicine. A singular feature is noted in the London *Echo*, that while the institution is called a "college," it is worthy to be ranked as a University, and that although it bears the name of the King, it is the most democratic movement in London's educational enterprises. "The practical character of this democratic institution is its great glory." Nearly 600 students are now connected with this "Poor Man's University"—the evening classes at King's. That this has been a boon to the poorer part of London's great life is a fact impossible to exaggerate.

IN Dr. Billings' National Medical Dictionary, one-third of the terms defined are Latin, being only 1,500 less than the English. We must also not fail to take into account the words derived from the Latin but incorporated into English and not credited to their Latin origin. "The practice of adding to the English vocabulary words adopted from the Latin and Greek is still carried on with activity, and there is little prospect of its ceasing. It is almost necessary as a means of denoting those new objects, ideas and relations, which are continually appearing and demanding expression. The resources of the English for the formation of new words from elements already existing in it are so limited that aid from other languages is indispensable. The new terms which are required by the progress of science are almost wholly derived from these sources." ["Brief History of the English Language" prefixed to Noah Webster's Unabridged Dictionary, Ed. of 1884.] A few minutes devoted to Latin daily will lead to wonderful results if persevered in for a sufficient time.

Twenty-five Cases of Extirpation of the Uterus from Cancer. A Consideration of Ultimate Results.—Dr. Charles A. L. Reed, of Cincinnati, presented to the recent meeting of the American Association of Obstetricians and Gynecologists, a report of twenty-five cases of complete vaginal extirpation of the womb for cancer with only two primary deaths—one from shock and one from iodoform poisoning. Of the twenty-five operated upon, but fourteen were of more than two years' standing, and hence were all that could be discussed with reference to their ultimate results. These fourteen were divisible into two classes of seven each, viz.: those in which the disease had existed for more than six months before the operation, and those in which it had existed for less than six months before the operation. Of the first class, *i. e.*, those of more than six months' (an average of 10 months) previous duration, all were dead; of the second class, *i. e.*, those of less than six months' (an average of 4 months) previous duration only one has since died. One of the recoveries is of more than five years' duration. The conclusion from these figures is that cases of cancer of the uterus ought to be remanded for operation as soon as diagnosed. Dr. Reed looks upon total extirpation as the only operation to be advised or practiced in these cases, the primary mortality from which, in experienced hands, varies from five to eight per cent.

Trans-Atlantic Fraudulent Preparations.—The American drug-consumer appears not to have a monopoly of fraudulent pharmacals. Dr. Alfred Hill, the public chemist for the city of Birmingham, England, reports that six specimens of Seidlitz powders, sent to him for analysis, were found to be impure, and out of fifteen specimens of sal volatile six were below the standard.

A pharmacist of Londonderry was recently tried and fined for selling the tincture of iodine and compound benzoin tincture made with methylated spirit. The only defense that was attempted was that this kind of tincture was never dispensed except upon a prescription marked "for external use."

The *Pharmacie Centrale*, of Paris, has given warning that attempts have been made to market an adulterated iodoform gauze that contains not more than eight per cent. of iodoform, whereas it is represented to contain 30 per cent., the difference in color being made up by the addition of a certain amount of phenol.

The True Physician.—Dr. T. Frazer Thomas, of Gainesville, Florida, is the author of the following sentiment touching the relations of the medical man to the lowlier members of his constituency: "The true physician will respect the feelings of the poor, both by the language and tone of voice in which he addresses them. He will remember that disease is his only passport to any house. He will act as a gentlemen to all, to the low, to the vile even, as well as the gentle and the rich. His duty is to heal, not to punish." Boerhaave said that "the poor were the best patients, for God is their paymaster." Because the physician receives no tangible recompense he must not forget his obligation to his patient nor his own self-respect.

In his intercourse with the world he must not be swayed by prejudice nor nationality. Friendship and good-will for all his patients are his polar stars, ever keeping in remembrance the priceless precept, "There is but one country—the earth; but one nation—the human race."

DOMESTIC CORRESPONDENCE.

PHILADELPHIA LETTER.

All danger of our having an epidemic of cholera being over for this year, quarantine vigilance has now relaxed, so as to detain only those vessels which have actually sickness on board or the cargoes of which consist of rags or other probably infected material. It is only justice to state that the escape of the community from the scourge is unquestionably due to the timely activity and unceasing exertions of our city and State health authorities. One of the measures calling for special mention is the employment of microscopical experts by the city authorities, so that in all cases in which bowel disorder aroused suspicion of cholera infection, bacteriological examinations and cultures were systematically made. The result was that in no instance was Koch's comma bacillus detected. Notwithstanding the proximity of vessels from infected ports which were lying in the river, it can be said that not a single case of cholera occurred in Philadelphia. This city is peculiarly fortunate in the fact that it is doubly protected by having the national quarantine at the Delaware Breakwater at the head of the bay, and by the State and City Lazaretto on Tinicum Island in the Delaware river near Chester. The situation for a time was grave enough however, and the air was filled with complaints of the interruption of commerce and detention of passengers, owing to a little clashing of authority between the city and State officials, just as occurred in New York between the local and National representatives. As a result an unexpected element of humor was introduced, for which we are indebted to the iconoclastic spirit of the Lazaretto physician, whose daily official communications to the city authorities were frequently couched in language more forcible than polite. He objected in vigorous terms to the "red tape and monkey business" of formal quarantine, and denounced "wind-mill legislation of health boards," which detained persons, "who had not cholera and had not been exposed to it," under conditions of great personal discomfort and in a place where they were certainly in danger of malarial poisoning. Finally the patience of the city board being exhausted, it resolved to return the last two communications of Dr. Herbst, and not to receive any more of his letters unless restricted to strictly official matters and language.

The indications are now pointing strongly in the way of a formal request being made to Governor Pattison to remove the Lazaretto physician, who, whatever may be his shortcomings in the way of respect for Health Boards, is not deficient in performance of duty, as a *persona non grata* and to replace him with one more in harmony with the city authorities. Among the vagaries of the late campaign might be mentioned the startling proposition of the City Health Officers, to quarantine this city against New York and to shut off all intercourse during an indefinite period during which cholera might be present to a greater or less extent in the latter city. The State Board of Health made an appeal for an appropriation to maintain some thirty-nine quarantine stations along the border of the State so as to prevent the importation of cholera. In order to make this in any way effective a standing army or cordon of sanitary police would be required to guard the border line, but even shot guns would not be successful in keeping out the infection unless all the water courses were also protected to their very sources. Moreover, land quarantine on any extended scale is a poor reliance at best because necessarily imperfect. The City Board of Health went to work with a will to avert the possibility of the epidemic gaining a foothold here. They paid especial attention to the sanitary condition of the city and extra inspectors were appointed and sent out to make house-to-house examination for nuisances, which were promptly abated. City pumps were condemned and ordered closed. Printed leaflets was distributed by the police force to house holders, giving directions for removing garbage, using disinfectants and white-washing cellars and out-houses. City Councils appropriated $50,000 for the special work of preventing the epidemic, etc., etc. As before stated, the several health authorities may be complimented upon the fact that not a single case has yet appeared and that the city is at present in a superior sanitary condition. It is true that within the past two or three weeks there has been something of an outbreak of diphtheria, and the Health Board successfully petitioned Councils to have $10,000 of the special cholera fund, devoted to stamping out this disease which has been prevailing to a moderate degree, from seven to ten or more cases being reported daily. About 72 deaths have occurred from diphtheria during the last two weeks, but the Board of Health denies that it has assumed the proportions of an epidemic and by promptly quarantining infected houses, isolation of cases, and thorough disinfection, it is believed that the disease is now kept fully under control.

Among the special benefits conferred by the cholera scare may possibly be additional facilities for the quarantine station at the Lazaretto, at Big Tinicum Island in the Delaware river, by establishing upon a neighboring island (Little Tinicum) suitable barracks, administration and hospital buildings, wharf, disinfecting plant, etc., covering an area of some twenty acres. This would make a commodious and complete quarantine station fully abreast of modern requirements. These plans it is said have been approved by the Commission appointed at the meeting of the International Conference of State Boards of Health held recently at Indianapolis, the said Commission having been directed to visit and inspect all the quarantine stations of North America. The Mayor has made this the subject of a communication to Councils urging the adoption of the plan and also the immediate construction of the buildings, so as to be prepared for a possible invasion of cholera next year. Unless, after conference with the National quarantine authorities, it is decided to combine the two stations in some other location, it is likely that this suggestion will be followed, and that Councils will make the necessary appropriation. Another incidental advantage which might be named was the appointment by Governor Pattison of Dr. E. S. Shakespeare as Port Physician, who has officially made a special study of cholera, having been commissioned by President Cleveland to visit Europe and report upon cholera to the Government, which report has recently been issued.

"The Pennsylvania Society for the Prevention of Tuberculosis" has been formed and has commenced its crusade against this great modern scourge by educating the public by the publication of tracts for gratuitous distribution. The first one has just been issued; it is entitled "How to Avoid Contracting Tuberculosis." It contains much good advice, and is based upon the scientific demonstration of the contagious character of the disease, upon which, the members of the Society evidently believe it is impossible to lay too much stress, and they have very little to say about "predisposition" or "the pre-tubercular stage," which we used to hear so much about.

The Board of Commissioners of Public Charities of the State of Pennsylvania has just issued its twenty-second annual report, in a handsome octavo volume, covering its operations during the year 1891. The beneficent influence of this board can scarcely be estimated. Its work will perhaps be best shown by a few extracts from the last report. During the year all the hospitals, alms-houses, and insane asylums in the State were visited, and the board reports that "in many of the hospitals, homes and almshouses, we were gratified to see that improved general government prevailed, and that many of the suggestions made by us in regard to the care and treatment of the inmates had been introduced by the managers and officers of the institutions.

"Most of the jails of the State have been visited during the past year. Those under the management of inspectors and wardens were found to be in good condition, and the laws for their government were generally enforced. Those under the care of the sheriffs, on the other hand, were, as usual, for the most part in bad condition. Indeed, they remained much the same as we found them years ago—schools of vice for the uninitiated young inmates who were there for their first offense. We believe that no improvement can be made in these prisons until they are placed under the control of inspectors, and are entirely removed from that of the sheriffs.

"Owing to a change made in the law regulating immigration, our duty, as United States Commissioners of Immigration, has ceased.

"We began the work on November 7, 1882, and from that time until August 31, 1891, when our services ended, 265,274 persons arrived at the Port of Philadelphia from foreign ports and were examined and inspected by our officers.

"In order to obtain reliable information as to whether any of the immigrants who landed at this port during the year ending June 30, 1891, and if so, how many, were admitted into any almshouse in Pennsylvania, an interrogatory circular, with blank, was sent to each institution, asking for an account of the number thus admitted. Returns were reviewed from all the alms-houses of the State (seventy-two in number), and they showed that not one immigrant who had landed at this port during said year had been admitted to an almshouse to become a charge upon the public."

This is a strong argument, if any were needed, to defend the laws now in operation against pauper immigration.

The Lunacy Committee of the State Board of Public Charities has done good work in having insane paupers removed that were detained in almshouses or in private custody, wherever they did not receive proper care, and transferred to the State hospitals for the insane. The Committee has turned its attention to the insane prisoners; and the Eastern Penitentiary is now under fire for confining an alleged lunatic convict in a bed and otherwise maltreating him because the wardens thought that he was shamming. As a result it is hoped that provision will soon be made for the establishment of an institution for the treatment of the criminal insane and insane criminals for whom the ordinary facilities in our hospitals are inadequate and unsuitable.

The medical schools are all in operation for the winter course. Each one reports improved accommodations and increased classes, and claims that everything points to a prosperous year. At the Woman's Medical College there have been added a capacious quiz room, a new library and reading room, and a comfortable lunch room; the chemical, physiological, histological and pathological laboratories have been enlarged, and new outfits provided, including additional microscopes. The anatomical and operative surgery rooms have had their ventilation improved and electric lights have been introduced. The next years' class, in the fall of 1893, will inaugurate the obligatory four years' course at this college. The University of Pennsylvania has also lengthened its course beginning with the session of 1893—4; the fourth year, which at present is voluntary, will become obligatory. All the medical schools of Philadelphia now require entrance examinations, have graded courses, and three years' attendance upon lectures, with annual examinations, and recommend a fourth year which at present is voluntary.

At the Polyclinic, Dr. John B. Roberts delivered the Introductory Address this year. He commented upon the success of this institution, and said that "the establishment of special colleges for practical work in medicine, adapted to the needs of practitioners, is an American idea. Great has been the success attending this effort to bring physicians into actual contact with patients in such manner that they may make practical study of disease under the direction of other physicians. The latter, while acting in a certain sense as teachers, are in reality only brother practitioners, similarly engaged in observing and studying nature's pathological processes. This community of interest and work makes our relation with those who come to the Philadelphia Polyclinic as pupil-physicians a very enjoyable one. The man, from a distant part of this country or from a foreign land, brings his experience and judgment to bear on the cases presented, and may aid much in unravelling knotty points that seem inexplicable to us, who have gained our experience here among different people and in dissimilar climatic surroundings. Thus it is that in my department the clinic hour sometimes becomes a sort of consultation in which I gain important hints.

"The benefit to be derived by the pupil is like that obtained by the boy in the manual training school or by the student in the laboratory. In fact, a polyclinic, where the classes are kept small, is what might be termed a 'clinical laboratory;' for in it the pupil-physicians handle broken limbs, tie arteries, chisel bones, make laryngeal applications, fit spectacles, and do themselves what, as students, they saw the professors do; sometimes indeed only by the use of an opera-glass.

"These manipulations must be done constantly by every man who wishes to be competent; for it is unfamiliarity that makes a workman timid, non-reliant and unsuccessful. The trained ear, eye, finger and hand are only obtained by the practice which takes away conscious effort. Many physicians of limited success and slender income owe their mediocrity to the absence of opportunity to become familiar with the many variations and phases of disease and injury.

"A doctor, to become experienced, must see and touch very many patients. This can only be done in a limited period of time by dispensary or hospital work in large cities; hence those who have no such opportunity because of residence, or other militating circumstances, must come to a post-graduate school, or else wait so many years for private practice to furnish enough cases that the experience, when gained, can only be enjoyed in old age.

"The Philadelphia Polyclinic is a clinical laboratory where the pupil uses his own brains and hands as in private practice; but here he sees in six weeks as much as, if not more than he would in the first six years of private practice. Another advantage is the direction to his observation and experience supplied by association with men who, as specialists, have given years to the study of a single department of medicine.

"It affords me pleasure to tell you that we can offer you better facilities than any of your predecessors have had here. Our surgical dispensary has outgrown its quarters, and the Trustees are about to make alterations to accommodate the increasingly large daily clinic. The number of gynecological and surgical operations is greater than ever, while the attendance of patients with eye, ear and throat difficulties offers unusual facilities for personal study. About 10,000 new cases per annum in the dispensary, and about 400 new cases admitted to the wards during the year, give the teachers a wide field for instruction. To this we add, as you know, many opportunities in the general and surgical hospitals of the city with which members of the medical staff are connected.

"The elaborate course of lectures to nurses in the Training School of the Polyclinic Hospital are open to the pupil physicians free of charge. By attendance on these, practitioners can gain many hints valuable to them in training nurses in their own localities."

The remainder of Dr. Roberts' address was devoted to "Diseases and Injuries of the Hip-joint," illustrated with diagrams and specimens.

The faculty of the Polyclinic has recently begun the publication of a medical journal filled with practical articles by the medical staff.

A patient was recently admitted who had attempted suicide by shooting himself in the ear. He spat, it is said, a portion of the bullet out of his mouth; the remainder was subsequently removed from his ear by Dr. Randall.

Dr. Roberts has recently tried infusion of salt solution into the veins of the arm, after shock from railroad crush. He recently ligated before the pupils the internal carotid artery, which was wounded in extirpation of a deep cervical tumor. The patient died subsequently with brain symptoms.

At the last meeting of the Philadelphia County Medical Society, Dr. Barton Cooke Hirst reported a case of symphyseotomy at the University Maternity Hospital, upon a young German woman with a kyphotic pelvis. The operation was readily done, and a live infant, a girl of normal development, was promptly delivered. The mother bore the operation well, and the infant's life was saved, which is a better result than could be obtained by craniotomy and not less good than Cæsarean section. It is believed that this case is the first in the United States in which symphyseotomy was performed as a substitute for the more grave Cæsarean operation, and its results warrant the hope that it may be found an efficient substitute for the latter, in appropriate cases.

At the suit of the Society for the Prevention of Cruelty to Animals, Dr. Wm. M. Zuill, a professor in the Veterinary Department of the University of Pennsylvania, was fined by a magistrate $20 for "docking" the tail of a carriage horse by request of the owner. It was in evidence that the horse was extremely sensitive, and that only about five inches of the tail was removed in order to keep the caudal appendage from injury by striking against the dash-board. This operation was not "docking," said the veterinarian. "Docking," he said, means the cutting off about a foot of the tail, leaving it the fashionable length, seven inches. A number of physicians from the Veterinary Department of the University of Pennsylvania testified that when such a small portion of the tail is removed the pain of the operation is but trifling, and in this case was not cruel, but necessary for the relief of the animal. The case will be taken to court on an appeal by Dr. Zuill.

The vacancy at the University of Pennsylvania caused by the death of Dr. Formad, who was demonstrator of morbid anatomy and lecturer on experimental pathology, has been filled by dividing the duties between Dr. Joseph McFarland, who has taken charge of pathological histology with [illegible]ology and bacteriology; while the teaching of morbid anatomy and the performance of autopsies has been awarded to Dr. Henry W. Cattell.

Prof. John J. Reese died on the 4th of September at Atlantic City, aged 74 years. As a lecturer and teacher of toxicology and writer upon medico-legal topics he was widely known. Personally he was highly esteemed and had a large circle of friends. He was graduated at the Art Department of the University of Pennsylvania in 1836, and in 1839 from the Medical Department, receiving at the same time the degree of Master of Arts. He was President of the Medical Jurisprudence Society in 1866–67. In 1854, he was appointed professor of medical chemistry in the old Pennsylvania College, and served for five years. In 1865, he was elected to the chair of toxicology and medical jurisprudence in the University of Pennsylvania, which he still held at the time of his death. He was the author of several manuals, but his best known work is his text-book on medical jurisprudence and toxicology. He also edited the seventh American edition of Taylor's Medical Jurisprudence.

Women's Medical College of Baltimore.

To the Editor of the Journal of the American Medical Association:

In commencing the instruction in Latin of the students of the Woman's Medical College of this city, I gave the following reasons why as medical students they should acquire a knowledge of that language. I am glad to say that all the students of the college except three or four, and they having previously studied it elsewhere, have joined the class.

1. Because though called a "dead" language, and although not now spoken by any nation, it is not really dead, but flourishes with a perennial and ever increasing vigor.

2. Because of its wide and far-reaching influence on the structure and development of the languages of all civilized nations, especially those of Southern Europe.

3. Because the resources of our language do not suffice for the constantly needed new supply of words, for which we are compelled to resort to the "classics."

4. Because we cannot dispense, if we would, with the Latin that has been incorporated into our own language.

5. Because science and medicine are full of Latin terms and others are being constantly added to our scientific vocabulary.

6. Because of the aid it affords to the study of science and medicine and to the knowledge of the source and meaning of words.

7. Because even an elementary and imperfect knowledge of Latin will afford great assistance in your medical studies.

8. Because the study of Latin disciplines the mind, promotes habits of thought and attention, elevates the sentiments, imparts a scholarly tone, and furnishes one with noble examples, grand ideas and a magnificent literature.

9. Because no translation affords an adequate conception of the great classical authors, and besides if it did scarcely anyone would ever read it. Thus those who do not study the language itself are virtually cut off from all its benefits.

10. Because a classical and literary training is the most important preparation for the medical career.

11. Because a very respectable knowledge of Latin can be acquired at very little cost of time and study, perseverance being the chief element of success in its acquisition.

12. Because its requirement is in the line of elevation of the medical standard, and consequently of the standing of the medical profession.

13. Because this college in common with all respectable American medical colleges now requires it as a part of its preliminary requirements, in conformity with the regulations of the American Medical College Association.

14. Because, for the new students, the forms of its requirement are most liberal and accommodating, a year being allowed for preparation.

11. Because through the liberality of our Faculty the opportunity of acquirement is offered to all of you—whether first, second, third, or fourth year students, free of cost.

Eugene F. Cordell, M.D.

Baltimore. Oct. 18, 1892.

To the Editor of the Journal of the American Medical Association:

Having received favorable responses to a letter addressed to all Southern Medical Colleges, we are authorized by them to say that a convention of their representatives will be held in Louisville, Ky., November 16, 1892, for the purpose of considering the question of a higher standard of medical education.

Yours fraternally,
W. T. Briggs,
G. C. Savage.

NECROLOGY.

Dr. John James Reese, of the University of Pennsylvania, died at Atlantic City, early in September. He was a toxicologist of national reputation, and had been identified with jurisprudential medicine and the University since 1865. He retired to an emeritus professorship in October of last year. He was the American editor of Taylor's seventh edition of the standard treatise on Medical Jurisprudence. He also published a college text-book or Manual of Toxicology, also an analysis of Physiology. In 1861, he served the Government as surgeon of volunteers, and was put in charge of the United States Hospital on Christian street, Philadelphia. He became the visiting physician to St. Joseph's Hospital and two or more other charitable institutions. He was in his seventy-fifth year at the time of his demise; he first joined the American Medical Association early in the fifties.

Dr. James Henry Steuart, of Baltimore, died October 8, in the fifty-eighth year of his age. He was a native of that city, son of the late Gen. George H. Steuart. He was a graduate of Princeton College in 1855, and of the medical department of Maryland University two years later. "He leaves behind him a monument in the gratitude and love of those to whom his high life and labors were a blessing and an example." His final illness was one of prolonged and patient suffering. A widow and three children survive him.

BOOK REVIEWS.

The Legends of Alaska. By Prof. Bushrod W. James, M. D. Porter & Coates, Publishers, Philadelphia.

This exceedingly attractive little volume gives us a glimpse into the peculiarities of the people of Alaska, as well as the natural resources of wealth that are found in that portion of our Nation's domain. The book is made all the more readable by reason of its being written in the style of Hiawatha.

Simple Water Test.—Into a ground glass stoppered, perfectly clean bottle put five ounces of the water to be tested. To the water add ten grains of pure, granulated, white sugar. Cork tight, and set in a window exposed freely to light but not to direct rays of the sun. Do not disturb the bottle, and keep the temperature as near 70° F. as possible. If the water contains organic matter, within forty-eight hours, an abundance of whitish specks will be seen floating about, and the more organic matter the more specks. In a week or ten days, if the water is very bad, the odor of rancid butter will be noticed on removing the stopper. The little specks will settle to the bottom, where they appear as white flocculent masses. Such water should not be used for potable purposes.

MISCELLANY.

The Southern Surgical and Gynecological Association will hold its fifth annual meeting in the city of Louisville, Tuesday, Wednesday and Thursday, November 15, 16 and 17, 1892, under the presidency of Dr. J. McF. Gaston, of Atlanta. Members of the medical profession are cordially invited to attend. The following papers will be read:

The President's Annual Address, J. McFadden Gaston, M.D., Atlanta, Ga.

Cervicitis, Bedford Brown, M.D., Alexandria, Va.

Surgical Treatment of Endometritis, A. Vander Veer, M.D., Albany, N. Y.

Experiences in Pelvic Surgery, A. V. L. Brokaw, M.D., St. Louis, Mo.

Craniotomy upon the Living Fœtus is not Justifiable, Cornelius Kollock, M.D., Cheraw, S. C.

A Case of Extensive Hematocele Resulting from Tubal Pregnancy Rupturing into the Broad Ligament, W. D. Haggard, M.D., Nashville, Tenn.

Fibroid Tumor of Uterus—Pregnancy—Rupture at Fourth Month—Operation Six Weeks afterwards—Death, S. M. Hogan, M.D., Union Springs, Ala.

A Contribution to the Study of Abdominal Pregnancy, H. C. Coe, M.D., New York City.

Tubal Pregnancy, Joseph Price, M.D., Philadelphia, Pa.

Some Kidney Operations, with Remarks, Geo. Ben. Johnston, M.D., Richmond, Va.

Surgical Treatment of Inguinal Hernia in the Male, Henry O. Marcy, M.D., Boston, Mass.

The Symptoms of Fractures—Their Importance and Significance, W. C. Dugan, M.D., Louisville, Ky.

The Part that Rectal Diseases play in Women, J. M. Mathews, M.D., Louisville, Ky.

Poisoning by the Bite of the Southern Spider, J. T. Wilson, M.D., Sherman, Texas.

A Plea for More Rapid Surgical Work, Ap Morgan Vance, M.D., Louisville, Ky.

Specialism as Related to the Practice of Gynecology, Wm. Warren Potter, M.D., Buffalo, N. Y.

The Relation of the General Practitioner to Gynecology, R. M. Cunningham, M.D., Birmingham, Ala.

Morphology of Abdominal Tumors, Howard A. Kelly, M.D., Baltimore, Md.

Modern Researches in Relation to the Surgery of the Genito-Urinary Organs, G. Frank Lydston, M.D., Chicago, Ill.

Amputation of Breast for Malignant Disease, H. Horace Grant, M.D., Louisville, Ky.

Fecal and Other Fistulæ Following Abdominal Section, Joseph Taber Johnson, M.D., Washington, D. C.

Nature of Shock and Allied Conditions, Wm. C. Dabney, M.D., University of Virginia.

The Present Status of Drainage in Surgery, A. Morgan Cartledge, M.D., Louisville, Ky.

Cholecystotomy, *with the Report of a Case, Edwin Ricketts,* M.D., Cincinnati, Ohio.

Treatment of Stones in the Biliary Ducts, W. E. B. Davis, M.D., Birmingham, Ala.

Personal Recollections of Dr. Benjamin W. Dudley and his Surgical Methods, Bedford Brown, M.D., Alexandria, Va.

Intestinal Anastomosis without Mechanical Devices—Circulo-Lateral Enterorrhaphy, J. D. S. Davis, M.D., Birmingham, Ala.

(Title of paper not determined), Geo. H. Noble, M.D., Atlanta, Ga.

(Title of paper not determined), W. L. Robinson, M.D., Danville, Va.

(Title of paper not determined), W. Gill Wylie, M.D., New York City.

J. McFadden Gaston, M.D., *President.*

W. E. B. Davis, M.D., *Secretary.*

New York State Association of Railway Surgeons.—The second annual meeting will be held in the Academy of Medicine, 17 W. Forty-third St., New York City, Monday, November 14, 1892. The following papers will be read:

1. Conservative Surgery as Applied to Railway Injuries, Dr. R. S. Harnden, of Waverly. Discussion opened by Dr. L. S. Pilcher, of Brooklyn.
2. A Contribution to the Study of Amputations at the Hip-joint, Dr. J. B. Murdock, of Pittsburg. Discussion opened by Dr. John A. Wyeth, of New York.
3. Osteogenesis and Osteoplasty in Crushing Lesions of the Extremities, Dr. Thomas H. Manley, of New York. Discussion opened by Dr. Robert F. Weir, of New York.
4. President's Address.
5. Expert Examination and Testimony in Railway Cases, Dr. B. A. Watson, of Jersey City. Discussion opened by Dr. Stephen Smith, of New York.
6. *The Transportation of the Wounded upon Railways,* Dr. W. B. Outten, of St. Louis. Discussion opened by Dr. J. W. Galbraith, of Omaha.
7. Calendula as a Surgical Dressing, Dr. A. Wilson Dods, of Ferdonia.

Official List of Changes *in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from October 14, 1892, to October 20, 1892.*

First Lieut. Samuel R. Dunlop, Asst. Surgeon, leave of absence granted is extended one month.

Major Johnson V. D. Middleton, Surgeon U. S. A., is granted leave of absence for one month, to take effect upon his relief from duty at Ft. Columbus, N. Y.

First Lieut. Allen M. Smith, Asst. Surgeon U. S. A., is relieved from further duty at Ft. Yellowstone, Wyo., and will proceed to Ft. Custer, Mont., and report to the commanding officer of that post for temporary duty.

Lieut.-Col. Charles R. Greenleaf, Deputy Surgeon-General, *is appointed member of a board of officers, to meet at* Helena, Mont., on the 1st day of November, 1892, or as soon thereafter as practicable, for the purpose of selecting a site for a military post at that place, as provided for under an Act of Congress approved May 12, 1892, entitled "An Act to establish a military post at or near the city of Helena, in Lewis and Clarke County, in the State of Montana."

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending October 22, 1892.

Asst. Surgeon L. W. Spratling, ordered to receiving ship "St. Louis."

Asst. Surgeon Lewis Morris, from receiving ship "St. Louis," and to the U. S. S. "Monocacy."

Asst. Surgeon George Rothganger, from the U. S. S. "Monocacy," and ordered to proceed home.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Three Weeks Ending October 15, 1892.

Surgeon George Purviance, granted leave of absence for seven days. October 12, 1892

P. A. Surgeon C. E. Banks, to rejoin station at Portland, Me. October 14, 1892.

P. A. Surgeon S. C. Devan, ordered to Washington, D. C., for special duty. September 29, 1892.

P. A. Surgeon P. C. Kalloch, to rejoin station at Boston, Mass. *October 14, 1892.*

P. A. Surgeon Eugene Wasdin, to rejoin station at Charleston, S. C. October 3, 1892.

Asst. Surgeon W. P. McIntosh, to proceed to Buffalo, N. Y., for temporary duty, September 25, 1892. To proceed to Ellis Island for temporary duty, September 30, 1892. To report in person to the Supervising Surgeon-General, October 8, 1892. To rejoin station at New Orleans, La., October 10, 1892.

P. A. Surgeon W. J. Pettus, to proceed to New York, N. Y., for temporary duty. September 25, 1892.

P. A. Surgeon G. M. Magruder, to proceed to Tacoma, Wash., for special duty. October 7, 1892.

P. A. Surgeon J. O. Cobb, to rejoin station at Detroit, Mich. October 7, 1892.

P. A. Surgeon J. B. Stoner, to rejoin station at Pittsburgh, Pa., October 3, 1892. Granted leave of absence for seven days. October 4, 1892.

Asst. Surgeon M. J. Rosenau, relieved from duty at Cape Charles Quarantine, October 11, 1892. Granted leave of absence for thirty days. October 13, 1892.

Asst. Surgeon L. E. Cofer, granted leave of absence for three months on account of sickness. October 15, 1892.

Asst. Surgeon C. H. Gardner, to report to the medical officer in command, San Francisco, Cal., for duty. October 12, 1892.

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ORIGINAL ARTICLES.

THE TREATMENT OF CATARRHAL DISEASES OF THE UPPER AIR PASSAGES.

Read before the Section of Laryngology and Otology, at the Forty-third Annual meeting of the American Medical Association, held at Detroit, June, 1892.

BY NORVAL H. PIERCE, M.D.,
SURGEON TO THE NOSE AND THROAT CLINIC, MICHAEL REESE HOSPITAL, *OUT-DOOR DEPARTMENT, CHICAGO, ILL.*

I pray you bear with me if, in the beginning of this paper, I present a matter which may at first seem irrelevant to the subject. My excuse is three-fold: First, that the condition referred to is frequently a cause of nasal and laryngeal disease; second, that it is of frequent occurrence; third, that its importance is often overlooked. I refer in this to the inspiratory collapse of the alæ nasi in persons enjoying fair health—a sucking in of wings of the nose at each inspiration. I say in fair health to distinguish the same phenomenon as it occurs *in extremis.*

The literature on the subject is peculiarly scant. Traube describes a case occurring during pneumonia and one in paralysis ascendans; B. Frankel, in a child suffering from meningitis. In Traube's cases the hinderance to air was so great that he employed a hair pin held in place by means of adhesive plaster to overcome it. Frankel employed an ear speculum. Drayton (*Med. Record*, Dec. 15, 1888) reports a cure in the case of a pupil in vocal culture by means of a cotton pledget and message. Zeim also reports a case. Latterly I am not aware of any additions to the subject, with the exception of the masterly contribution by Mortz Schmidt (*Ueber das Ansaugen der Nasenfugel, Deutche Mediscinischer Wochenschrift*, No. 4, 1892), to whom I owe much of my knowledge of this condition. He accounts for the scant observations on the subject by the fact that we are accustomed to at once introduce the nasal speculum in beginning our examinations without at first observing the alæ of the nose. We have, however, only to request our patients to take a full breath before introducing the speculum to find how frequently this condition, in a greater or less degree, occurs, and that a convergence which furnishes an absolute hinderance to the full respiratory act is not by any means seldom, in which cases the patients express relief if the alæ are simply held outward with the fingers.

The condition is made still worse when there exists at the same time a deviation of the septum cartilgineum. The convergence includes the entire alæ as in facial paralysis, or only the plica vestibuli. The former occurs most frequently in those of a dolichocephalic type, the latter in the brachycephalic.

The cause of this condition is to be found in an atonic condition of the nasal wall from loss of function of the musculi-dilatores et lavatores alæ nasi. This weakness is in turn caused by all those long continued conditions which setting in at an early age interfere with nasal respiration, whereby the muscles have not sufficient exercise. Adenoid vegetations are a prominent cause of this.

Now as to the philosophy of this in connection with nasal or laryngeal diseases. We must first understand that the beginning of the respiratory track is at the entrance of the nose and not at the larynx; and that behind every constricted point in the entire track from the entrance of the nose to the finest alveoli there is a rarefaction of air during every inspiration. The degree of rarefaction varies in ratio, to the extent of the constriction and the force of inspiration. The natural effect of this rarefaction is a suction which is exerted upon the blood within the domain of such rarefaction, and which is made manifest to us by a local hyperæmia of the mucous membrane and consequent excessive secretion.

Respiratory convergence of the wings of the nose may give rise to nearly all the phenomena arising from contraction of any other part of the respiratory tract, migraine, aprosexia, asthma, etc. Usually the influence is exerted directly on the mucous membrane of the nose, cavum or pharynx, producing redness, swelling of the mucous membrane, and increased secretion of mucus. Tinnitis aurium is not infrequently caused by congestion of the mucous membrane lining of the cavum, which congestion, if dependent upon convergence of the alæ of the nose, may be relieved by preventing the latter condition. It is true that the conditions of the mucous membrane enumerated may have existed for so long a time that they may require direct treatment, but I have relieved some troublesome cases with swelling of the turbinated bodies accompanied by secretion, headache, etc., by means of the simple but eminently effective instrument which I will now speak about.

The treatment is simple. Schmidt has tried gymnastics of the nasal muscles, but has given it up as unsatisfactory. He has used the Feldbaush tubes for a long time with satisfactory results, but they cause a certain amount of irritation from pressure on the septum. Feldbausch, on the suggestion of Schmidt, has produced the instrument which I hold in my hand and which is quite satisfactory. They are of course made in different sizes to fit different noses. It is held in place by introducing the heads from behind into the pocket at the end of the nose, when the spring is pressed up against the alæ of the nose, the connecting part resting on the septum cutaneum.

Acute Rhinitis.—During the trying weather of the past winter we have had ample opportunity of treating coryza. The symptoms have not varied from the well known ones of slight pyrexia, lassitude, chilliness, frontal headache, blocking up of the nose, with swelling of the mucous membrane, hypersecretion, etc. The treatment which we have employed has proven most satisfactory. Internally we have given large doses of bromides, or a tablet compounded after the formula of Dr. Lincoln, consisting of camphor, gr. $\frac{1}{4}$, fluid ex. belladonna gr. $\frac{1}{8}$, quin. sulph. gr. $\frac{1}{4}$, one every hour. The local application by means of the cotton carrier of cocaine dissolved in tinct. belladonna in from three to five per cent. solution has been especially useful in immediately relieving the most prominent symptoms,*i.e.*,turgesence of the mucous membrane, frontal headache, and throbbing in the nose. We believe that such treatment shortens the duration of all cases of coryza and in some cases seems really to abort the attack. If there is a predisposition against cocaine we may use tinct. belladonna, alone applied on the cotton carrier. We have not lost sight of the fact that chronic rhinitis in the beginning results from relapsing acute attacks and have retained the patients under observation until the turbinated bodies returned to a normal condition.

For this purpose we have used nearly the same treatment as that employed in simple chronic rhinitis. In this the most prominent position is given to the nasal bath. The ingredients used and the mode of employment are simple and effective. A half teaspoonful of salt and a half teaspoonful of glycerine are dissolved in half a glass of warm water.

Take a teaspoonful of this mixture, rest the point of the spoon on the lower part of the nostril, slowly throw the head backward, saying at the same time a continuous "ah," and allowing the fluid to gently run into the nose. Then incline the head forward and the fluid will run out. Repeat this in each nostril three or more times night and morning. The sodium chloride has a soothing effect upon the mucous membrane; the glycerine a mildly depleting action; the water is cleansing. I have lately had constructed a glass receptacle in the shape of a covered spoon having a spout which faciliates the taking of the bath. Douches are never allowed in any form of simple chronic rhinitis. Not because we believe they are potent in causing disease of the middle ear but because of their local effect on the turbinated bodies. We are convinced that they increase rather than diminish the hyperemia present in simple chronic catarrh and that they aid the hypertrophic process toward which simple chronic rhinitis has always a strong tendency. Very frequently the nasal bath is all the treatment required. In other cases it may be necessary to use sozo iodide of zinc in sugar of milk, $\frac{1}{10}$; this especially in catarrh of the cavum where decomposition of secretion is very liable to occur. Or we may use menthol dissolved in iodine in from two to ten per cent.solution where turgescence and the nervous symptoms predominate, or peroxide of hydrogen when the purulent features are most prominent as is the case especially in the rhinites of children. Thymol is also a most useful agent in certain cases where the discharges are liable to become inspissated. We have almost done away with aqueous sprays in the treatment of nasal diseases because of the mechanical irritation caused by the extreme force with which they strike the parts to be treated, using instead one or the other of the petroleum vehicles.

There has lately been brought before the profession by the chemists, McKesson & Robbins, a preparation of stearic acid and zinc which to my thinking bids fair to become a valuable addition to our armamentarium. In the manufacture of this new excipient stearic acid, prepared from suet, is used. When a soluble salt of zinc is added to this acid a light mollescent precipitate results resembling in its extreme lightness calcinated magnesia. Various medicinal agents are combined with this powder, such as tanic, boric, salicylic acids, balsam peru, aristol, ichthyol, menthol, and many others. One of the chief advantages of this preparation is its power of adhering to the surface upon which it is placed. Rubbed on the palm of the hand it is absolutely unaffected by the addition of water—the latter acting as quicksilver does, and when poured off not the slightest moisture remains. It is said to remain in place on the urethral mucous membrane for from six to twenty-four hours regardless of the passing secretions. Another important feature is its freedom from the formation of the little balls which has rendered the use of insufflations in the past more harmful than beneficial. Further experience with these preparations must be had before a conclusive opinion may be stated but at present we are most favorably impressed. In the pharyngitis which so often accompanies chronic rhinitis, where the mucous membrane is coated over with a tenaceous, glary layer of partially inspissated mucus, we first cleanse the parts by wiping with a cotton pledget until the secretion is entirely removed; then a five to ten per cent. solution of nitrate of silver is applied by means of a spray. The conditions which were first designated by Schmidt of Frankfort-on-Main, "bilateral pharyngitis," and which is so frequent in singers, is, in our experience, best treated by cauterizing the red granular streaks which stretch up along the lateral pharyngeal walls with mitigated lapis over their entire extent even up into the Rosenmuller's groove if need be. The results of this procedure, especially in vocalists, are often remarkable. The voice is improved and the disagreeable tickling sensation immediately removed. In catarrh of the crypts of Liuschka's tonsil the following operation is performed. After thorough cocainization of the palate, pillars, pharynx, and post nasal space, the palate is hooked back by means of a palatal retractor. I am accustomed to the one figured below and which is quite practical. After this the tongue is depressed by a large, short handled mirror and held so that the crypts of the tonsils can be seen in the mirror at the same time that the tongue is being depressed. A probe bent at a proper curvature, and having mitigated lapis fused in its head is then carried up into the crypts of the tonsils which are thoroughly cauterized. In this way much of the dropping of mucus so frequently complained of may be immediately arrested, and which may evade all other modes of treatment.

In hypertrophic rhinitis there is no time lost in any method of treatment other than the cold or electric snare, or the electric cautery. The results of this treatment are so much more satisfactory and permanent than those obtained by the use of chromic acid, acetic acid, etc., that the two methods in our opinion are not to be compared.

In circumscribed anterior hypertrophies the cold or electric snare is used. In the electric snare ordinary piano wire No. 8 is employed instead of platinum. The piano wire has greater mechanical and less electrical resistance and the former point is one of great practical value in snaring post nasal hypertrophies. When a turbinated body is hypertrophic along its entire length we draw three lines of cauterization from behind forward with the knife shaped point, one above, one below, and one in the middle. I find that the results are much enhanced if the furrows thus burned are then carefully rubbed over with a crystal of trichloretic acid. The reaction after such an application instead of being more severe, is less, and the relief of obstruction thus obtained instead of lasting for only a year or a year and a half as is often the case when the cautery alone is used, is nearly always permanent.

Atrophic Rhinitis.—It has been my fate, it seems to me, to have to deal with more than my share of this disease. It commenced while at work in Chiari's Clinic in Vienna, when he portioned out to me six cases to be treated by Braun's vibratory massage. Instead of trying to dodge such a fate I have yielded and given the subject a good deal of careful attention. I will be as terse as possible in my description of the treatment which I have found most beneficial. It is an open question in my mind as to whether or not the fears of the douche causing ear trouble is well founded or not. I am aware that we have strong authority for such fears and such ones as Roose, Mackenzie, etc., are not to be ignored. Still, and it may be that my experience has been peculiarly happy, there have come to me no untoward effects from this valuable therapeutic agent, with the one exception of a man who in my presence deliberately turned his head to one side while taking a douch. At least I have my patients who are suffering with fœtid rhinitis take a douch once or twice in a day, but only in this disease is it ever used. I have the directions plainly printed on a slip which the patient takes away with him.

First let me digress long enough to say that after thoroughly testing Braun's vibratory massage in the Vienna Clinics I gave the results in a paper which I read last year before this Section. One of my conclusions therein was that to the cleanlinesss which is so essentially a part of this mode of treatment is due most of the speedy relief of disagreeable symptoms, fœtid secretions, etc. Braun claimed that under his method the atrophic turbinated bodies returned to the natural proportions. My experience has not substantiated this latter statement. During the past year I have modified Braun's methods in the following manner: The patient comes to me daily. A piece of absorbent cotton loosely pulled from the roll is torn to a size which will completely but loosely fit the inferior meatus and space included between the middle of the inferior turbinated body and septum. This *dry* cotton is held in the accompanying instrument, and the vibratory movements carried over the inferior, middle and superior turbinated bodies, pharynx (as far as possible), septum and floor of the nose. From three to six pledgets of cotton may be necessary in each nostril to entirely bring away the discharge, scabs, etc. Allow me to accent the fact that the cotton is dry, as I believe this dry method distinctly superior in its results to the moist method as recommended by Braun. This absolute cleanliness cannot be too strongly insisted on. On examination after this massage the mucous membrane looks pink and clean, and the patient often expresses a feeling of comfortable warmth and relief. Immediately afterwards we may use balsam peru, 10 per cent., iodo-glycerine, thymol in albolene, or any of the many good things recommended for the disease provided they are not too irritating. But I am convinced that the vibratory massage carried forth as above described has a distinct worth, and will shorten the treatment of fœtid rhinitis by many months.

I had intended to speak further on the treatment of simple laryngeal inflammation, especially as it occurs in singers, but I fear that I have had more than my share of time.

I have intentionally refrained from speaking of deflective septum in connection with rhinitis, as it would lead me into too vast a field,

In conclusion I would say that there are few cases that do not require constitutional treatment,

Rheumatism or the rheumatic diathesis, plethora, scrofula and alcoholism should be carefully watched for and treated according to the well known lines. We cannot cry out too loudly against smoking as a cause in many individuals of disease of the upper air tracts. Especially harmful are cigarettes, because the smoke from them is inhaled and this causes atrophy of the vocal cords. A recent case of this kind vividly brought the effect of cigarette smoke to my notice. An actor after two years of excessive cigarette smoking applied to me for an increasing loss of vocal resonance and timbre with recurring attacks of hoarseness. I found the vocal cords atrophied to two thirds their former size. I had examined them when they were normal.

MENTAL ABERRATION ATTENDING HYPERTROPHIC RHINITIS, WITH SUB-ACUTE OTITIS MEDIA.

Read in the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Mental aberration attending intra-nasal affections and their sequelæ is considered rare by the profession; yet, it has been the experience and observation of many of the Fellows of the American Rhinological Association, that mental aberration, or insanity *per se*, has appeared upon the existing intra nasal disease, that removal of the latter often causes the former to subside.

Roosa gives, in his valuable books on "Diseases of Ear," a case of insanity and suicide, on account of tinnitus aurium. Experienced rhinologists can recall one or more cases of mental aberration due to intra-nasal disease. In fact, so much importance is attached to disease of the upper air passages, being the *fons et origo*, of mental aberration, that a committee was appointed, consisting of Fellows of the American Rhinological Association to examine inmates of State Insane Asylums, and ascertain the per cent. of patients affected with disease of upper air passages.

While consent has been given by the Superintendents to make the rhino-pharyngoscopic examinations, the committee has not yet reported, owing to the difficulty in getting the insane to submit to the necessary investigation.

It has been the common experience of practical and experienced rhinologists to almost daily have patients with *impaired intellectuality, the mind* going into vacuity, the lawyer or speaker losing the thread of argument, the accountant making egregious blunders in his addition, another unable to concentrate his mind to read an interesting chapter or column or carry on a spirited conversation; another *will hear an interesting discourse* or enjoy a thrilling article, yet unable to give the salient points presented, is neglectful, absent-minded. A prominent farmer, in settling with his tenants, made numerous blunders, making mistakes in dollars and cents, as often against as for self. Is sad and despondent, very melancholic thinks he is losing his mind. A prominent merchant often fails to charge merchandise sold, or recharges the second or third time, or fails to enter the credits, is not dishonest and suffers much mortification on finding the stupendous errors, is irritable, easily insulted, has presentiment of sudden death, feels that he is losing his mind, is quite emotional. A young lady of good social position thinks herself unclean, unfit to keep company with her mother, sisters, sees numerous imaginary unclean spots on her dress and clothing, is morose, seeks solitude, is melancholic, says she will be lost on account of her sins, is often found walking the porch or kitchen in night clothes in midwinter, or wandering in this nude state out in the yard; she had been formerly quite anæmic, had retroversion and catarrhal endometritis, and with proper treatment, the latter was cured, but the mental aberration continued and was cured by treatment directed to the naso-pharynx and galvaniztion. Another patient, married lady, with chronic rhinitis, becomes intensely sick, excited, emotional, and has fear of impending death; sheds tears freely on going to church or to any public gathering; is despondent and seeks solitude. Treatment directed to the upper air passage and galvanism effect a cure. Another patient, a maiden, has been afflicted with symptoms enumerated in the last case, *is afraid to be left alone,* sleep by herself, or sleep in a dark room; at night, keeps the lamp burning brightly, the window shutters open, the window blind up so that she may see any burglars who might chance to disturb her quietude; she has insomnia, has the most intense aversion to her family, afraid of her uncles and aunts, seeks solitude; will not be seen by friends or strangers, has constant presentiment of death and other evil omen; only through force, will she leave her house; has violent headaches, highly emotional, brings forth tears in abundance, is suspicious of mother and sister, has many delusions. *Treatment directed to* upper air passages, nerve tonics, galvanism and proper attention to retroversion effected a cure.

Mrs. —, age, 35 years, former health good, family history excellent, has had hypertrophic *rhinitis for* years, nasal occlusion, though a woman of strong mind and body, is quite emotional, subjected to any great excitement or bad news, develops the tetanoid state; is given to frequent shedding of tears, seeks solitude, is melancholic; is restored to health by cauterizing the turbinated bodies (lower and middle). In twenty-four hours amelioration of her mental condition is perceptible to her family and friends: restoration to health is quickly accomplished.

Mr. T., age 25 years, has naso-pharyngeal catarrh and aural catarrh, with tinnitus aurium and deafness, acquired irritability of temper, melancholia; partial loss of memory, inability to think any length of time on one subject; has either frontal or occipital headache all the time; has insomnia, agoraphobia and anæsthesia of the skin in spots; has ocular catarrh and asthenopia and neuralgia in different parts of the body. Tuning fork heard best in left ear; drumheads slightly opaque and *without polish. Hearing S. A.,* six inches; D. A., eighteen inches. This is a case of extreme neuræsthesia. Patient has been, on account of the above conditions, tempted to commit suicide, and will not remain *alone night or day*; "says he will kill himself if left alone, and can't help it," is deluded.

Mrs. M. D., age 40 years, has been affected with intra-nasal disease about 15 years; the time dates to an *attack of acute* rhinitis during the influenza, 1872. There was extensive hypertrophy of the lower and middle turbinated process, marked nasal stenosis causing pressure. Symptoms—headache, both occipital and *frontal*; patient seeks solitude, is melancholic, wants to stay at home all the time; *though she* has a lovely home and earthly blessings, her sadness and despondency last; sheds tears without provocation, is not, in feeling and disposition, her former self. Cauterizing the turbinated bodies and other local treatment, with a blood and nerve *tonic*, effect a cure.

Mr. H., age about 40 years; farmer, family history good, general health excellent, excepting the affection in upper air passages. Though he has been a hard worker and able to transact business, his health, for the last year or two, has *been greatly impaired; he feels languid, indifferent, tired,* that he is losing interest in business, has nasal stenosis, is a mouth breather, has an oppressed, full *sensation* in the naso-orbital regions; constant headache, greatly aggravated by colds, sudden changes in weather and hot sun; dislikes to be in company, seeks solitude, is melancholic, irritable, peevish, morose; has an indifferent, stolid, and insane expression; *has constant pains in various regions of the body,* at times increased in severity.

In the spring of 1891, his symptoms for worse were increasing; he sought no professional advice, but tried to work or wear off his indisposition; he went to the field to plow, had a violent headache, stopped plowing for a while and lay down on the ground; from this time has no recollection of what transpired for days. He failed to come home, left horse in the plow. *Family and neighbors institute a search,* but Mr. — could not be found. A nephew was in the city of Lexington and saw Mr. — on the street in his shirt sleeves and old working clothes. Mr. — could give no account of himself, did not know where he was, how or when he came to that city, nor on what business; said he "had a bad headache and lay down in the field," and was aimlessly wandering over the city, speaking to no one, and like the "Wandering Jew," finding no rest but continually passing on, virtually was lost to himself and family and friends and surroundings. His nephew brought him home; he does not sleep well, appetite capricious; is very weak and nervous, says his "head (forehead) and left half of head hurt terrible head, that the left half of head throbs all the time." A rhinoscopic examination reveals a naso-pharyngitis, hypertrophy of the lower and middle turbinated bodies, nasal stenosis; the post nares and vault of pharynx is a purplish red, and swollen, angry appearance, coated with thick, tenacious inspissated mucus; great tumefaction; the left side of the head is *sensitive to touch; the tragus* and mastoid and auditory canal show great pain and anguish on touch, the drumhead is bulging and greatly congested; paracentesis is resorted to; the throbbing pain, abnormal sensations rapidly subside. The naso-pharyngeal chambers are *sprayed* and cleansed with a mild antiseptic wash and daily medicated for a week with mild, soothing astringent non-irritant remedies, the congestion and inflammation reduced to a minimum. Now the turbinates are cocained and *cauterized,* and the nasal stenosis relieved in 72 hours. From the latter treatment, the mental faculties begin to clear up; the clouds gradually pass away; patient is sprayed for three weeks with mild astringent, anti- and aseptic, soothing remedies and in a month is cured of all mental aberr*ation*. The nasal stenosis and enlarged turbinates have been removed and the lining of the naso-pharyngeal chambers placed in a healthy state; patient is restored to former health and has no appearance in manner, expression or acts to what he was before the treatment.

Formerly, it was difficult to get the general profession to attach much importance to diseases of the upper air passages. They consider them local, and not capable of producing constitutional manifestations, and will tell a patient his intra-nasal disease does not amount to much, it will never *kill him; to* take outdoor exercise, eat nutritious *food*, and sleep eight hours out of every twenty-four, and then laugh at patients for having acquired great irritability, melancholia, or tinnitus aurium from having rhino-pharyngitis, and will jocularly remark: You are hysterical, or are malingering. What absurdity! How irrational are these remarks to an intelligent and honest sufferer, whose only desire and prayer are relief and cure. I know no more troublesome affection than naso-pharyngeal and aural disease to the patient. Intra-nasal affection was, a few years ago, considered incurable; but now the light has dawned, and cure after cure is being made, though it will take the profession at large many years yet to realize what is the pathology, etiology, differential diagnosis, prophylaxis, the best therapeutic measures, and the sequels of intra-nasal diseases.

The symptoms characteristic of hypertrophic catarrh are, more or less impairment of the faculties of the will, intellect, emotion, and memory, irritability, anger, nasal obstruction, impaired nasal respiration, oral respiration, and hawking from the posterior nares of the characteristic yellow, ropy muco-pus. When the recumbent posture is resumed, there is a dropping or gravitation of the secretion to the posterior pharyngeal wall, which often causes irritative cough; at morning, when the patient arises, there is a great commotion of the respiratory muscles, produced in trying to rid the naso-pharynx of the abundant tenacious secretion, and nausea and vomiting are often the results. Other results are headache, either frontal, vertical, or occipital, impairment of one or more of the senses of smell, sight, taste, or hearing, hæmoptysis, and epistaxis, impaired articulation, tickling in the throat, constant inclination to swallow, paroxysms of sneezing, insomnia, frightful dreams, suicidal tendency, and inclination to suspect and doubt the sincerity of the truest friendship. The catarrhal inflammation may extend to the larynx and trachea, and give rise to the symptoms of laryngitis and tracheitis. Many catarrhal patients regard the thick, white, yellowish inspissations of muco-pus which are hawked from the naso-pharynx as tubercles expectorated from the lungs, and if a slight hæmorrhage of the throat occurs from the irritative cough and violent rasping of the throat, they think they are the subjects of prodromal phthisis. Even in epistaxis, if the blood gravitates and trickles from the vault and posterior nares into the pharynx, producing cough and irritation of the throat, and is ejected by the mouth, it is supposed to have come from below the glottis, when, if a minute physical examination of the chest, and a rhinoscopic and laryngoscopic examination were made, the site of the hæmorrhage would be located in the vault or posterior nares, and all mental and nervous shock, which are often more prejudicial and enervating than the occurrence of a true pulmonary hæmorrhage, would be avoided. Many victims of catarrh have a vacuous and depressed expression, and are gloomy, absent-minded, easily harassed, so that life seems a burden to them. Cold hands and feet, impaired circulation, numbness, anæsthesia, or hyperæsthesia of one or more parts of the body, peripheral neuralgia, palpitation of the heart, and anorexia, are frequently present in catarrh of the upper air passages.

COMPLICATIONS AND SEQUELS OF CHRONIC CATARRH.

It is very easy to account for the diverse affections following catarrhal inflammation of the upper air passages when the anatomical, pathological, and neurological relations of the parts are considered. The meninges and base of the brain are in close proximity to the catarrhal mucous membrane, and many blood vessels that the latter supply, also supply the former, either directly or indirectly. The same is true in regard to the distribution of the cranial nerves. They communicate with various ganglia and proximate and remote organs, and convey irritation directly or reflexly to different parts of the body. With what facility, then, when irritation or pain is produced in the terminal filaments of the nerves supplying the mucous membrane of the upper air passages, can it be transmitted to distant organs or members or brain! It is equally as easy to have irritation or congestion of the brain follow chronic catarrhal inflammation of the upper air passages. In the nasal cavities are the special nerves of smell, the olfactory nerves connecting the olfactory ganglia with the central parts of the brain, and communicating with the nasal branch of the ophthalmic, the anterior dental branch of the superior maxillary, the spheno-palatine, and the naso-palatine ganglia.

The gustatory, one of the special nerves of taste, is distributed to the tongue, and communicates with the submaxillary ganglion and hypoglossal nerve. The chorda tympani is a nerve of taste, a branch of the facial, and supplies the *mucous membrane* of the *drum*, also communicating with the gustatory. The glosso-pharyngeal arises from the medulla oblongata, and is distributed to the mucous membrane of the base of the tongue, pillars of the *fauces*, *tonsils*, *soft palate*, *middle ear*, *Eustachian tubes*, *drums*, and *upper part of pharynx*. It is a nerve of taste, sensation, and motion. The spheno-palatine ganglion supplies the *tonsils*, *soft palate*, *uvula*, *pharynx*, and *Eustachian tubes*.

The pneumogastric nerve, communicating with other important nerves, as the spinal accessory and the glosso-pharygeal, and with important organs (four vital ones—the heart, lungs, stomach and liver) supply the mucous membranes of these organs and that of the respiratory trail. They also supply the mucous membrane and muscular coat of the œsophagus, and send the superior laryngeal nerves to the mucous membrane of the larynx and crico-thyroid muscle. The inferior laryngeal nerve is a motor nerve, and supplies all the muscles except the crico-thyroid.

The spinal accessory nerve is a motor nerve, arising from the medulla oblongata and spinal cord, but receives sensitive filaments from the pneumogastric. It has external and internal branches, unites with the inferior laryngeal and recurrent branches of the pneumogastric, supplies the cleido-mastoid and trapezius muscles, and gets sensitive branches from the first, second, and third cervical nerves. The internal branches are directly connected with the vocal movement of the larynx; the external with respiration. The hypoglossal arises from the *medulla oblongata*, and is a motor nerve of the tongue, but receives sensitive filaments from other nerves after it leaves the brain.

The facial nerve, arising from the *medulla oblongata*, is a motor nerve to the muscles of the face, to those of the *external* ear and, by its *tympanic* branches, to the *stapedius* and laxator *tympani*, through the otic *ganglion*, the *tensor tympani*, through and by connection of its trunk with the *vidian* by the petrosal, the *levator palati*, the *azygos uvulæ* and a few muscles of the neck, and receives sensitive filaments from the fifth.

The fifth nerve, the great cranial nerve of sensation, is divided into three branches. First is the ophthalmic, which supplies the lachrymal gland sac, conjunctiva and ophthalmic ganglion of the sympathetic and *nasal branch* to *Schneiderian membrane*.

The second division, the superior maxillary, supplies the teeth of the upper jaw and *mucous membrane* of the *antrum maxillare*, and the third division, the inferior maxillary, supplies the external ear and meatus, filaments to anterior two-thirds of tongue, lining of cheek, fauces and lower jaw, integument of chin, lower lip, and lower half of face and muscles of mastication. It is both a sensitive and a motor nerve.

Through the medulla oblongata and spinal cord, irritation of the mucous membrane of the upper air passages is conveyed to the brain, to the arm, forearm and hand by the brachial plexus, to the chest and its contents by the dorsal and sympathetic nerves, to the abdomen and its contents by the lumbar and sympathetic, and to the lower limbs by branches given off from the lower portion of the spinal cord and the sympathetic.

Neuralgia, partial paresis, hyperæsthesia, analgesia of the extremities, epilepsy, chorea, and accompanying chronic naso-pharyngeal catarrh, are readily explained through reflex irritation, and subside when proper treatment is given the catarrh.

The sequels of naso-pharyngeal catarrh are reflex cough, sneezing, stenosis of nasal cavities, ocular catarrh, asthenopia, aural catarrh, headache—either frontal, vertical or occipital—nasal polypi, tonsillitis, enlarged tonsils, hypertrophy of the submaxillary, anterior and posterior cervical glands, patulency of Eustachian tubes, hæmorrhage from the throat—either the naso-pharynx, larynx or trachea—epistaxis, laryngitis, tracheitis, bronchitis, and catarrhal phthisis, neuralgia, or numbness of the limbs or trunk, anæsthesia or hyperæsthesia of the skin, paresis of arm and forearm, dyspepsia, hay fever, irritability, melancholia, partial loss of memory or intellectual faculty, insomnia, frightful dreams, agoraphobia, vertigo, palpitation of the heart, neurasthenia, stammering, suicidal tendency, asthma, chorea, epilepsy, loss of taste, anosmia, anæmia, anorexia, deafness, reflex irritation of the genito-urinary organs, an abundant discharge of nasal mucus or sneezing during coitus, aphonia, erythema and herpes of the nasal integument and lining, tinnitus aurium, otalgia, dysphagia and constipation. In cases of naso-pharyngeal catarrh of long standing there is a tendency to irritation, catarrhal inflammation or debility of all the mucous membranes of the body.

When we consider the pathological elements of the various forms of chronic catarrh, and engrafted upon them, the very frequent or recurrent subacute naso-pharyngitis, with increased dilatation of the blood-vessels, hyperæmia, redness, heat, tumefaction and pain, followed by exudation of liquor sanguinis, diapodesis of the leucocytes, increased infiltration of the connective tissue, cell proliferation and disorganization of lymph; rhinoscopic examination showing a congested, red, dry and swollen appearance of the mucous lining—later on the dryness gives way to moisture and an abundant secretion of mucus or muco-pus, the mucous and submucous tissue is œdematous, infiltrated and thickened, and the glands and follicles are distended and abnormally active; and often added to this, the pressure of a polypus, septal spur, ridge, an exostosis enchondroma, deflected septum and adenoid growth in the vault and fauces, causing irritation and pressure symptoms, congestion, and producing irritation and inflammation by continuity, contiguity and reflex imitation in distant organs and nerves; it is very easy to explain why mental aberration should attend long continued disease of the upper air passages, as well as other sequelæ.

About, or less than, a decade ago, the rhinologist was considered to exist only in name—a myth, and not entitled to a foothold in the profession; but to-day, rhinology has become one of the chief cornerstones of the temple of medicine and surgery. It is built on physiological, histological and pathological rocks; upon these we, the rhinologists, have builded our church. The gates of doubt, charlatanism, ridicule and infidelity shall no longer prevail, and now, in this enlightened day, "*he who doubts is damned already.*" To the general practitioner we say: Give the stomach, liver, heart and alimentary canal and chest organs a rest, and come up higher and see the light turned on, not through a glass darkly, but see new realms, diseases and pathological lesions, for old things have passed away. Behold a new creation!

To the gynecologists and genito-urinary surgeons the rhinologists are ready to say, Through reflexes and neuroses we meet you, not only halfway, but all the way. The intra-nasal tissue is glandular, erectile, and has various nerves, blood and lymph channels ramifying it like the utero-genital organs, and on proper provocation, sends out reflex irritations and congestions to the spinal cord, brain and other remote organs.

To the alienists we say, Look into the naso-pharyngeal chambers, and often a cause for insanity can be found. To the oculist, aurist, dentist: You must bow in reverence to rhinology, for your work is very often *nil* unless you pay your respects to the rhinologist, for often he only can solve your difficulties, and cure your patients. The more frequently you consult him, the better it will be for humanity. To the surgeon we say: You are indispensable.

The successful rhinologist, like the ideal gynecologist, must, from necessity, be a skilful and conservative surgeon.

Rhinology is a haven in which many "mortals" find rest, ease, surcease of sorrow, health, peace, joy and long life.

INFECTIOUS PSEUDO-MEMBRANOUS FOLLICULOUS TONSILLITIS AND PHARYNGITIS.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Repeated confirmation of the discovery of the specific bacillus of true diphtheria has stimulated renewed clinical as well as bacteriological study of other pseudo-membranous inflammations of the tonsils, pharynx and nose, so that our literature of the past few months has contained numerous accounts of "Tonsillitis Lacunaris," "Angina Follicularis," "Pharyngitis Fibrinosa,""Pharyngitis Phlegmonosa," "Rhinitis Membranosa," etc.; a group of diseases which cannot be said to be as yet sufficiently and accurately described, for in some respects they closely resemble diphtheria while in other features they differ widely from that disease.

The opinion of bacteriologists that in these affections diphtheria can only be excluded positively by the absence of the Klebs-Loeffler bacillus, as determined microscopically, is doubtless correct as applied to a few border-line cases, yet one should not permit this fact to engender neglect of macroscopic signs and clinical symptoms upon which a differential diagnosis may also be made, usually with greater promptness, and with reasonable certainty. We are, however, better able to do this now, since we know that in a bacteriological sense, at least concerning diphtheria, there *is* an exact line of demarkation to be drawn.

Concerning the various forms of folliculous tonsillitis and pharyngitis, bacteriology has not yet taught us so much, but we expect to show, from a clinical standpoint, that at least two of these forms of tonsillitis, are as distinct from each other as they are, on the other hand, from true diphtheria.

The recital of an interesting case in point will make our meaning more explicit.

The patient—one of the most intelligent and popular physicians of Chicago, had been exposed to infection by attendance on a case of so-called scarlatina-diphtheria.

A distinct sense of malaise and hebetude with slight soreness of the throat preceded, for a day or two, a chill, which was followed by a temperature of 104° F. Our first examination was made the following morning: temperature 102° F., pulse 100, skin perspiring, face flushed, mental hebetude, and enlargement of the cervical lymphatic glands. The tonsils were only slightly swollen, but were deeply congested and exhibited a thin, whitish, pseudo-membranous punctated deposit which corresponded with the follicular openings. Behind each tonsil, and separated from it by the posterior pillar, the chain of muco-lymphoid glands which occupies the angles of the pharynx on each side and courses thence upward into the naso-pharynx, had developed into a mass larger than the tonsil itself, and was covered by a similar deposit. Two or three isolated muco-lymphoid glands on the posterior pharyngeal wall likewise presented whitish points. No membrane could be observed at any time on any portion of the pharynx other than as described on the purely glandular parts, but we wish especially to emphasize the aspect of this deposit. It was *not* in "cheesy" pellets which often protrude from the crypts through the follicular orifices and which are composed of fat, epithelial debris, inspissated mucus, etc. It was a veritable pseudo-membrane, thin, gray, translucent and firmly attached to the underlying mucosa. Its punctated appearance around the mouth of each follicle suggested that the larger part of the pseudo-membrane might lay *within* the glandular structure—that the crypts and follicles were likewise lined with it. Here and there two, three or four puncta, from close proximity, ran together forming somewhat larger spots, and an occasional layer of muco-pus if not cleaned away would lend an appearance of still greater extent and uniformity to the pseudo-plague. Nevertheless, as far as concerned the pharynx alone, the absolute limitation of the exudate to the muco-lymphoid glandular structures and its punctated appearance differentiated it from the customary picture of genuine diphtheria, the aspect being plainly that which can best be described under the name of septic or infectious tonsillitis and pharyngitis.

But within the nose the view was somewhat different. After shrinkage of the congested turbinate bodies by cocaine spray and dislodgement of an abundant, viscid secretion, one observed a distinctly pseudo-membranous deposit to cover the vestibule and extend within the right nostril as far as one could see, that is especially over the cartilaginous septum narium and anterior part of the inferior turbinate body. This membrane was *uniformly* distributed over all visible parts in the right naris, but otherwise here also it differed from the ideal diphtheritic deposit, even when observed in the nose, it being thinner and semi-translucent. It had more the aspect of deadened epithelial debris, but was evidently not merely such. The left nostril was less affected. The external nasal appendage was much swollen, painful and of decided erysipelatous hue, the redness, however, being confined, not extending above the bridge of the nose. A good post-rhinoscopic view was not obtainable.

In explanation of this nasal feature of the case time permits us only to state, that non-diphtheritic pseudo-membranous rhinitis is common, that a variety of intra-nasal inflammatory states are accompanied by fibrinous exudates in which the absence of the Klebs-Loeffler bacillus has been repeatedly determined. Other microörganisms usually of the streptococcos or the staphylococcus species are often found and it is probable that infection, either primary or secondary by these microbes may result under favorable conditions in the formation of a pseudo-membrane.

I have only to remind rhinologists of the frequency with which an exudate forms after electro-cauterization of the turbinate bodies, and that individuals differ widely in their susceptibility to this formation. In my own experience a pseudo-membranous exudate has followed cauterization much less frequently since I have exercised special care in operating to leave an unbroken eschar, thus serving to prevent secondary infection by microörganisms.

The eyes of our patient were also affected, the right eye very severely, but as stated by Dr. Boerne Bettman, who had charge of these organs, they manifested none other than evidences of severe conjunctivitis.

The patient was confined to the house for two weeks, and suffered from a sense of depression for about two weeks more, when complete recovery ensued without any signs of the diphtheritic sequelæ, paralysis or nephritis. The treatment does not fall within the scope of this paper.

A certain interest attaches to this case by reason of the conjunction of the pseudo-membranous rhinitis with the follicular tonsillitis and pharyngitis, but the pressing question with these two conjoined as with either separately concerns the diagnosis: Is it, or is it not diphtheria? We might regret the absence here of bacteriological investigation, yet such, in part at least, would have defeated the very object of this paper which is to present, in connection with recently acquired knowledge of the bacteriological relationships, such a study of the clinical features that a reasonably certain diagnosis can be made therefrom in the sick room; for I submit that it is there and at once that one needs to answer this question correctly, and that too, in the nature of things most times without the aid of the microscope.

And first, what has bacteriology already taught us as to the identity or non-identity of these processes? It is established that genuine diphtheria is occasioned by the Klebs-Loeffler bacillus. But other microörganisms are capable of exciting pseudo-membranous inflammation of various clinical types which Loeffler is cited as having grouped together under the generic term of pseudo-diphtheria, meaning of course that they are not diphtheritic at all. Clinically they differ from true diphtheria in some one or more particulars—in character of membrane, constitutional symptoms or sequelæ, but resemble it so closely that until the advent of bacteriological support, we were often unable to state positively that these non-diphtheritic pseudo membranous cases might not be diphtheria of a mild type. This was often true of folliculous tonsillitis and pharyngitis or "angina follicularis." Investigators have uniformly failed to find the Klebs-Loeffler bacillus in this disease, but have found a variety of other microbes.

Sendtner,[1] of Munich, studied four cases and found the streptococcus pyogenes and streptococcus erysipelatosus, and recalls in this connection the clinical relationship which has been observed between erysipelas and puerperal fever, and angina follicularis. Barnabei,[2] of Rome, observed twelve cases which he denominated "primary erysipelatous angina." They were characterized by redness and swelling of the tonsils and fauces, and from the crypts of the tonsils an exudate soon showed itself in the form of small white points. A microbe, indistinguishable from the streptococcus erysipelatosus, was present in all cases. Dubler (*Virchow's Archives*, Heft. 3, 1891) also reports two cases of infectious phlegmonous pharyngitis in which both in the pus and in the splenic blood a microbe indistinguishable from the streptococcus of erysipelas, was found.

Rendu,[3] reports two cases in which virulent pneumococci were found, in which the angina follicularis was contracted while sleeping among pneumonia patients.

Hajek,[4] of Vienna, describes four cases of non-diphtheritic "pharyngitis fibrinosa"[4] connected either with the staphylococcus pyogenes aureus or the streptococcus pyogenes, one of which cases supervened upon "tonsillitis lacunaris."

It scarcely suffices, however, to attribute these diseases exclusively to the organisms named, since with the exception, perhaps, of the streptococcus erysipelatosus, they are all found in the mouth in health,[5] but in at least some of the cases, it is stated that they were present in unusually large numbers, and that the cultures showed great virulence.

With our patient the infection was with reasonable certainty traceable to a case of "scarlatina-diphtheria," but from a bacteriological standpoint this disease is likewise a false diphtheria, occasioned by microbes other than the Klebs-Loeffler bacillus. Bourges,[6] of Paris, classifies the anginas of scarlet fever into: 1. Angina erythematosa; 2. Angina pseudo-membranacea, occurring early or late in the disease, circumscribed or diffuse, mild or severe; 3. Angina gangrenosa. He concludes from bacteriological investigation that the erythematous and nearly all the early pseudo-membranous forms as well as many of the late pseudo-membranous cases, are caused by secondary infection with the streptococcus pyogenes which happens usually through the tonsils. Huebner,[6] of Leipzig, Babes,[7] of Pest, and Seifert,[8] of Wurzburg, assert practically the same. This is not assuming, however, that in exceptional instances secondary infection by the Klebs-Loeffler bacillus might not occur and genuine diphtheria become associated with scarlatina, but the probabilities favor the position that the case by which our patient was infected, was an ordinary streptococcus pseudo-membranous angina.

We have designated our case as "infectious," by which is meant that some distinct species of parasitic organism, having gained access to the affected parts, has there multiplied and acted, both directly and by elaboration of chemical poisons, as the specific cause of the disease. The contagious nature of certain forms of tonsillitis has long been suspected and much evidence thereof has been published by individual observers,[9] yet the fact has not been generally credited, for the reason that the greater number of cases failed of any such signs, and when evidence of contagiousness was conclusively present the disease would be attributed to the diphtheritic infection or the subject be dismissed as a mere coincidence. We now know that the diphtheritic infection, *i. e.*, the Klebs-Loeffler bacillus, is not present in this disease, but that there are present in the form which we describe under the name of infectious pseudo-membranous tonsillitis, other microörganisms of kinds that establish for it a possible contagious character.

I am sure that clinically, one can distinguish at least, *two* types of acute folliculous tonsillitis and I propose to name them in contradistinction to each other: 1. Simple folliculous tonsilitis, and 2, infectious pseudo-membranous tonsillitis.

With the simple form there may or may not have been previous chronic hypertrophy or inflammation; it is conditioned, if not caused by "taking cold," *i.c.*, by refrigeration of some part of the body surface, which determines vascular engorgement of the tonsils exactly as in another individual it may occasion vascular engorgement of the nasal turbinated bodies. The tonsil swells, the follicular openings are obliterated and the pent up secretion acts as a further irritant. it becomes inspissated and mixed with epithelial débris; it is soon forced out to the surface of the gland in the form of "cheesy" pellets, which are altogether different from a pseudo-membrane. Finally, when the tonsils are free of this accumulated débris, or at times, earlier, if the globules are forcibly dislodged and removed, the tonsillitis rapidly subsides.

The *infectious pseudo-membranous form* we have just described at length in relating our case, and it will again be referred to in the summary.

Now, we note in current literature a disposition to attribute all cases of tonsillitis and pharyngitis to "infection," the truth of which we cannot deny, for pathogenic microörganisms, being everywhere and especially present in the mouth, might readily invade the tonsils at a time when their power of resistance is lessened by vascular engorgement and pent-up secretion, and may even play an important part in the formation of the "cheesy" globules. In simple folliculous tonsillitis, however, such infection would seem more like a secondary than a primary process, for in typical cases the inflammation subsides as soon as the tonsil can be freed of its accumulated inspissated secretion; but "infection," either primary or secondary, affords a ready explanation of cases which deviate from the typical, which are mixed, and in which both "cheesy" and true punctated pseudo-membranous exudate can be discerned.

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[1] Internationales Centralblatt fur Laryngologie, Rhinologie, etc. April, 1892. S 472.

[2] Internationales Centralblatt für Laryngologie, Rhinologie, Nov., 1891, S. 243.

[3] Loc. cit., April, 1892, S. 473, and Nov., 1891, S. 243.

[4] Internationales Centralblatt fur Laryngologie, Rhinologie, etc., April, 1892, S. 475.

[5] Dittrich-Prager Med. Wochenshrift., No. 38, 1890. Int. Centralblatt fur Laryngologie, etc., May, 1891, S. 558.

[6] Int. Centrl. fur Laryngol., June, 1891. S. 619.

[7] Loc. Cit., Nov., 1889, S. 247.

[8] Loc. Cit., June, 1891 S. 619.

[9] Dubousquet-Laborderié Bouchard Landowzy, Int. Centr. fur Laryngol., etc., Mai, 1892, S. 520.

In summarizing, we will state what are seemingly the logical conclusions of this study:

That we can distinguish at least two forms of acute folliculous tonsillitis.

1. Simple folliculous tonsillitis, which is characterized by congestion and swelling of the tonsils, with protrusion from the narrowed follicular openings of cheesy globules which may simulate a punctated pseudo-membranous exudate, but which is really not such; without evidence of primary parasitic infection as a cause, and therefore not contagious; capable, however, of being transposed into a conglomerate variety of tonsillitis by secondary infection with pathogenic microörganisms; usually not preceded by a distinct chill, and not accompanied by much fever or systemic depression.

2 Infectious pseudo-membranous tonsillitis, which is characterized by deep congestion, but often only by moderate swelling of the tonsils, and by a punctated exudate of pseudo-membrane, the spots of which are in size from 2 to 4 mm. in diameter, and are attached around the follicular openings, presenting the appearance as if the crypts were also lined by the same material; *unlike* the cheesy pellet the exudate is thin, translucent, and so intimately connected to the underlying mucosa that it cannot be detached without bleeding or without force; two or more puncta may join at their borders and form larger spots, but after cleansing away all muco-purulent matter this punctated conformation of even the larger pseudo-membranous areas may be readily discovered. In addition to the tonsils, any or all of the muco-lymphoid glands in the pharynx may be likewise affected, especially the chain of glands located just behind the tonsil and separated from it by the posterior pillar, but the pseudo-membranous exudate is limited absolutely to the glandular structures of the pharynx, although careful cleansing and critical inspection will be required to demonstrate this fact. The cause is infection by any one of several species of pathogenic microörganisms, *e.g.*, streptococcus erysipelatosus, staphylococcus pyogenes aureus, pneumococcus,, streptococcus pyogenes, etc., and it is not unlikely that with closer clinical study aided by bacteriological confirmation, we may be able in the future to further subdivide this form of tonsillitis into varieties in accordance with the particular species of microörganism which has acted as the cause. It is infectious or contagious and is known to become endemic. It is often ushered in by a chill, and accompanied by moderate or even high fever. It may be complicated by albuminuria, but is not followed by paralysis. The Klebs-Loeffler bacillus of true diphtheria is never found in this disease. That by attention to these details this form of tonsillitis and pharyngitis, with very few exceptions, may be readily distinguished clinically from true diphtheria, which is characterized not by a thin translucent, punctated exudate, but by thickish, opaque, diffuse plaques of pseudo-membrane which are not limited to the glandular structure, but which, when originating on the tonsil, rapidly embrace as well the pillars of the fauces, and extend to or involve at the same time the posterior pharyngeal wall and velum palati.

NOTE: Since the completion of this paper our attention has been called to an article by Dr. Adolph Baguinsky, in the *Berliner Klinische Wochenschrift* of February 29, 1892. He examined for bacilli 154 cases, being all that were admitted as diphtheria to the *Kaiser und Kaiserin Friedrich Krankenhaus* during a certain period. They all exhibited "the same naked-eye local changes, *i. e.*, a dirty gray-white to green pseudo-membrane on the mucosa or tonsils." He does not state whether or not cases were included which are ordinarily denominated tonsillitis, and characterized by a *punctated* pseudo-membrane limited to the glandular structures, but one would infer that such were not included among his cases. Of the 154 cases, Klebs–Loeffler bacilli were found in 118, and these were the severe cases. The others contained only cocci and ran a mild course.

Baguinsky concludes that there are two diseases called diptheria—exhibiting the typical diphtheritic deposit, which can only be distinguished from each other microscopically; a result which is interesting, but not especially pertinent to the subject of our paper, which is tonsillitis. Baguinsky mentions also two cases of "rhinitis fibrinosa" unaccompanied by serious systemic symptoms in which Klebs–Loeffler bacilli were found, and advises caution regarding a non-diphtheritic diagnosis in this disease. The two cases, however, indicate but little, for it is not contended otherwise than that diphtheria, either nasal or pharyngeal, can occur with but slight systemic disturbance.

Closing the discussion, Dr. Casselberry said: I prefaced my paper by stating that "the opinion of bacteriologists that in these affections diphtheria can only be excluded *positively* by the absence of the Klebs–Loeffler bacillus, as determined microscopically, is doubtless correct as applied to a few border line cases." But I have described at length the clinical aspects of these forms of tonsillitis, because I believe it both necessary and possible thus to make a correct diagnosis in the majority of cases. I have been unable to find any record of the presence of Klebs–Loeffler bacilli in cases of apparent tonsillitis in which the pseudo-membrane was of the character which I have described in connection with the infectious form of this disease, *i. e.*, punctated, thin, translucent, and limited to the tonsils and muco-lymphoid glands of the pharynx. The cases cited by Dr. Wright as recorded by Baguinsky and others were nasal cases, evidently nasal diphtheria in which, by reason of the absence of constitutional symptoms, the disease, without microscopic examination, would have been mistaken for non-diphtheritic "rhinitis fibrinosa." As intimated in the paper, it seems to me more difficult to exclude diphtheria in nasal than in pharyngeal cases, although it would seem preposterous to assume even a possible diphtheritic infection as a cause of the many pseudo-membranous deposits which occur after the use of the electro-cautery in the treatment of hypertrophy of the turbinate bodies.

AT the late meeting of the Virginia State Medical Society, Dr. Landon B. Edwards, the efficient secretary of the society and editor of the *Virginia Medical Monthly*, was unanimously elected an Honorary Fellow of that organization.

THE WARREN TRIENNIAL PRIZE of $500 has been awarded by the staff of the Massachusetts General Hospital to John Strahan, Belfast, Ireland. Subject "Ricketts."

THE EDISON PHONOGRAPH AND THE BETTINI MICRO-PHONOGRAPH.

THE PRINCIPLES UNDERLYING THEM AND THE FULFILMENT OF THEIR EXPECTATIONS.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit. Mich., June, 1892.

BY J. MOUNT BLEYER, M.D.,
OF NEW YORK CITY.
SURGEON TO THE NEW YORK NOSE AND THROAT INFIRMARY, EDITOR ELECTRICAL REVIEW, NEW YORK CITY.

Gentlemen: I intend to lead you into the mystery of mysteries, by the demonstrations I am about to make and explain to you, regarding the adoption of the Edison phonograph and the Bettini micro-phonograph as an aid to our and other sciences. It will be necessary for me to make some explanatory remarks in order that you more fully comprehend the real mechanism of these wonderful contrivances of the age, both from a physical and mechanical point. I will then follow up by illustrating to you clinical phonograms, and other records and will then take before you several such records so as to demonstrate the practicability of my investigations.

The value of these two machines cannot be overestimated at the present time of my experimentations, and here I wish to state, that even some of my crude methods of taking and reproducing records or phonograms are not as yet sufficiently developed to make them thoroughly practicable for many reasons, but suffice it to say, that those which will be demonstrated to you, at this period of my investigation must at once lead all thoughtful students to think of the further prospects of the growth and development in the mechanism as well as in the application of the phonograph and the micro-phonograph. The results nevertheless are at this date gratifying and from my practical illustrations to you, I wish each of you to judge for himself.

At the onset of my lecture, I must say: That as a means of quantitative analysis, in reference to sound, musical and other tones can be measured by the phonograph and the Bettini micro-phonograph as heat is measured by the thermometer and air pressure by the barometer. The aim of all sciences is to become more and more quantitative, because you can have no standard of measure. When, however, the standard of measure can be obtained the analysis is quantitative and scientific, and the use of these two machines in physiological researches is a thoroughly scientific matter.

It is found that each succeeding age has either given birth to new scientific facts, or has elaborated preëxisting ones.

The phonograph was suggested to Mr. Edison in the spring of 1877, while making some experiments with a machine for automatically recording and reproducing Morse characters. This apparatus indented the characters in paper, much the same as a Morse register, The reproduction was accomplished by this new invention, which was intended to receive telegraphic messages from one circuit and to transmit them upon another without the aid of a skilled operator, and also to facilitate business in a repeating office.

As a source of amusement and to test the rate of speed at which a Morse operator could receive or read, the reproducing machine was caused to run at a high velocity, and when the speed was increased to such an extent that the ear could not recognize the Morse characters, Mr. Edison noticed that the machine gave off a humming or musical sound, which varied according to the characters on the record, apparently talking in a language which was not understood.

It at once occurred to him that if instead of *indentation representing Morse characters*, he could obtain indentations made by vibrations representing articulate speech, the machine would reproduce the spoken words. It was but the work of an hour for such a genius to make a little alteration upon that machine. He substituted for the telegraph recording apparatus a diaphragm with an indenting needle, and, with this addition the machine was used as a test for the idea of a phonograph. This test proved the correctness of his inventive judgment.

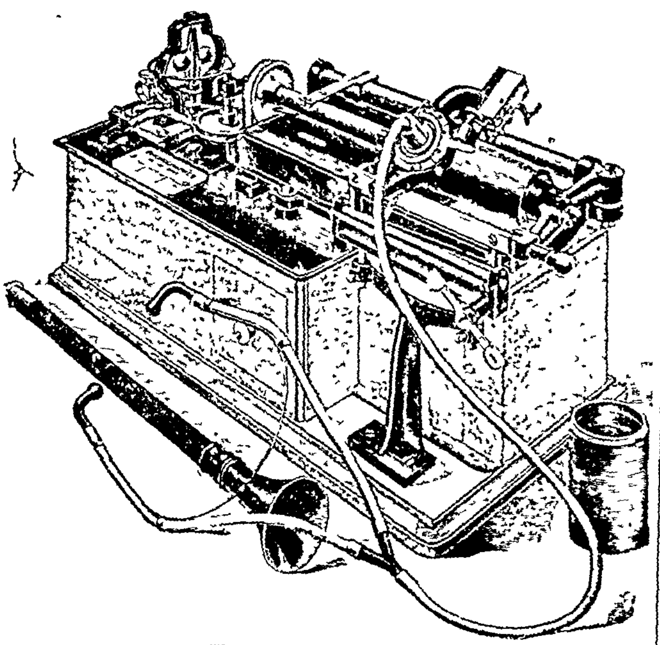
Following closely on the heels of this experiment, a phonograph was constructed on a plan more favorable for attaching a diaphragm, and tin foil for receiving the indentations was substituted for paper. It was then *exhibited for the first time* outside of Mr. Edison's laboratory at the office of the Scientific American and several different exhibits. One was then presented to the South Kensington Museum of London and the Academy of Sciences of Paris. It was a curious spectacle in witnessing the expression of the faces of the academicians when his agent, M. Puskas, caused the wonderful instrument to speak. A murmur of admiration was heard from all parts of the hall—a murmur succeeded by repeated applause. The learned Academy, generally so cold, has never before abandoned *itself* to such enthusiasm. Yet some members of a skeptical turn of mind, instead of examining the physical fact, ascribed it to moral causes, and a report soon ran through the room which seemed to accuse the Academy of having been mystified by a clever ventriloquist. Certainly the spirit of Ancient Gaul is still to be found among the French, even in the Academy. One said that the sounds emitted by the instrument were precisely those of a ventriloquist. Another asked if M. Puskas, face and lips as he turned the instrument did not resemble the grimaces of a ventriloquist. A third admitted that the phonograph might emit sounds, but believed it was much helped by the manipulator. Finally the Academy requested M. du Moncel to try the experiment, and as he was not accustomed to speak into the instrument it was unsuccessful, to the great joy of the incredulous. Some members of the Academy, however, desirous of ascertaining the real nature of the effects, begged M. Puskas to repeat the experiment before them again under such conditions as they laid down for him. M. Puskas complied with this request, and they were absolutely satisfied with the result. Yet others still remained incredulous, and it was necessary that they should make the experiments themselves before they accepted the fact that speech could be reproduced in so simple a way.

The anecdote I have just related cannot be interpreted to the discredit of the Académie des Sciences, since it is especially bound to preserve the true principles of science intact, and only to accept startling facts *after* a careful examination. Owing to this attitude, all which emanated from the Academy can be received with complete confidence; and we cannot approve *too highly of* reserve which does not give way to the first impulse of enthusiasm and admiration.

If this invention had taken place in the middle ages it would certainly have been applied to ghostly apparitions, and it would have been invaluable to miracle-mongers.

We have all read much about this wonderful invention and the world at large still awaits the further growth of that child.

The latest types of the phonograph and the Bettini micro-phonograph which forms the subject of this demonstration and paper are of the most improved patterns. Though the micro-phonograph has not had its exhibits as yet, with one exception, and that one was before the New York Medical Association, in April 1881, where I had the honor to first practically demonstrate this machine and show how as an assistant to medical and other sciences it might be applied.

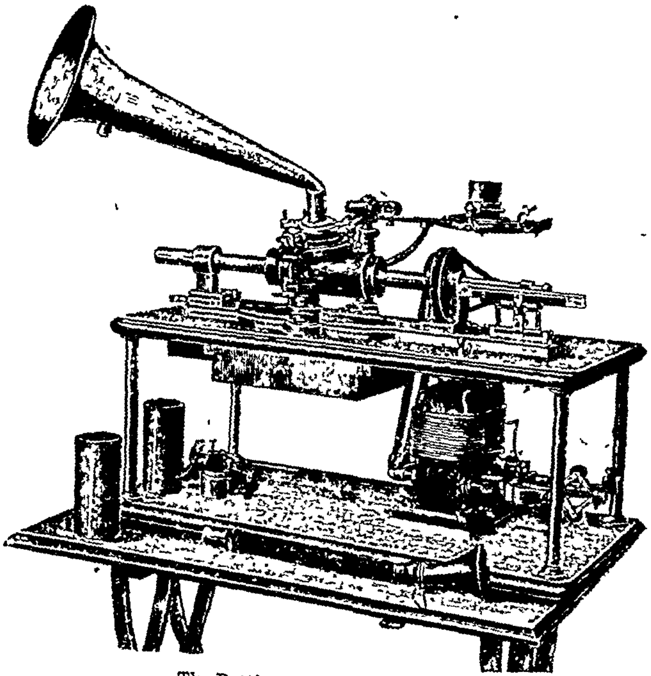


The Edison Phonograph.

Here it would be well to give by way of explanation the principles underlying the phonograph in order that those of our profession not thoroughly versed in the scientific points of the phonograph and the micro-phonograph may grasp those details I propose to give. Note that when a stroke is given a bell, the blow sets the particles of metal in vibrations. These vibrations are communicated to the surrounding atmosphere, which being an elastic medium, conveys the impulses to the ear, and waves of sound pulses roll in very much as the waves come rolling in toward the shore down by the sea. The speed at which the sound travels is 1,093 feet per second at the temperature of freezing water, and as the temperature rises the speed increases about one foot to every degree.

Every human being has in his or her throat a delicate membrane which, when he or she speaks, is set in vibration, and in turn sends the vibratory impulses from the throat and mouth, and they impinge upon the drum of the ear. This membrane vibrates at different rates in different persons. For instance, in the soprano of women it is exceedingly rapid, while the bass of male singers is much slower. From this we find that the pitch of woman's voice is far higher, as a rule, than that of a man. The pitch of a tone depends upon the number of vibrations in a second, and upon nothing else, therefore if a tone is produced with double the number of vibrations of another, it is said to be an octave higher. Now, when we speak with the mouthpiece of the phonograph or the micro-phonograph transmitter, the sound pulses impinge upon the glass diaphragm of the phonograph and upon the metal diaphragm of the micro-phonograph, which causes the needle attached thereto (*phonograph*), *and the spider attachment to the diaphragm* of the micro-phonograph, to indent the composition wax cylinder as it traces over the surface, the depth, length and general character of the sound pulses. When the tone is loud and full, they are deep, and when the pitch of the tone is high the indentations are close together. The recorders are those parts of either of the machines that hold the diaphragms, and in the phonograph the recorder is turned to the right, bringing the reproducing needle thereon mounted into play, which, as it traverses the track made by the broader needle, slips in and out of the indentations therein, and in so doing moves the reproducing diaphragm on the phonograph with it, and thus by mechanically imitating the motions of the diaphragm in one's own throat, reproduces all that was spoken in loud, middle or low tones, sung in different registers, modulated tones as used by the actor or elocutionist, and in many other phases of reproduction too numerous to cite here.

The micro-phonograph thus far has been only alluded to. An illustration is given below in two cuts, representing one of the cardinal features of a new phonograph. This is the invention of Lieut. Gianni Bettini. It is of marvelous power and perfection, and stamps its inventor as a man of surpassing mechanical genius.



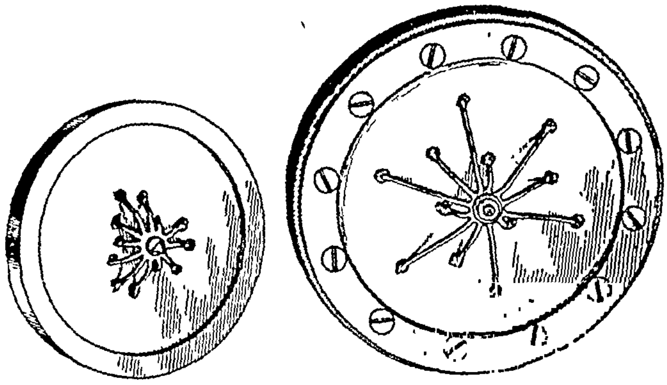
The Bettina Micro-Phonograph.

As an actual acoustical achievement in the recording and reproduction of both vocal and instrumental effects, it defies description in words. It can only be appreciated by listening to its performance.

This phonograph is peculiar in form and construction of its diaphragm and the novel and philosophical method of attaching to its surface the central needle-point, which also produces its indentations in the rotating cylinder of wax while the diaphragm vibrates over it by the action of vocal words or instrumental sounds. Let me briefly explain this Bettini new diaphragm.

Instead of attaching the needle-point directly and firmly to the center of the diaphragm as heretofore done, Lieut. Bettini uses what he calls a "*spider*," which is a little frame having several radial legs, the feet of which bear against the diaphragm at a number of points surrounding the center, and at different distances from it.

The object of this "spider" with its radial bearings is to carry out the inventor's discovery that this tensioned diaphragm does not vibrate as a whole, as has been supposed, and as it would have to do under the action of air waves, according to the teaching of modern science; but on the contrary, that it vibrates in numerous small divisions or sectors which may happen to be in unisonant or tensioned sympathy with the vibrating organs of the voice or of other tones directed against the diaphragm. Thus should the center of the diaphragm, for example, happen to be a note or a silent point not in sympathy with a certain pitch of tone, some small sector might prove to be in exact sympathy, and would thus cause the needle, through one of the spider legs, to respond, and in this way not only would the whole diaphragm be utilized, making the reproduced tone many times louder than by a single point of central contact, but would secure much greater variety of the timbre, or *clang tint* of voice, as also a record of a much greater number of voices and musical instruments than could possibly occur with a single point of contact with the diaphragm's center. (See these spider leg bearings in cut.)



Recorder Reproducer
Of Lieut. Bettini's Micro-Phonograph.

Although the Edison phonograph, with its single central bearing and needle-point, does actually record and reproduce accurately the spoken sounds and timbre of the voice, as also the sounds of a number of musical instruments played at the same time, it is a fact which you will observe at once, that its achievement in the complexity of articulate speech, in the inspiratory and respiratory sounds, either of the normal or abnormal, in the delicate fineness of any vocal expression, in the volume of tone and in the number of voices and instruments capable of being recorded at the same time, it is said by scientists that it bears not as good a comparison—due alone, as believed, to this method of utilizing the sympathetic sectors of the vibrating diaphragm.

Now if the inventor could actually determine beforehand every division and subdivision of the vibrating diaphragm constituting a sector which would act in sympathy with every pitch of tone employed in vocal speech and instrumental music, and could he then adjust a "spider" leg to each without unduly stiffening the diaphragm, the number of instruments and voices he could record and reproduce would be almost unlimited. Having no means, however, of thus determining in advance these various sympathetic sectors, he had simply to guess it, and attach his spider by as many points of bearing as he deemed prudent, the result of which has astonished himself no less than it has astonished all who thus far have heard the micro-phonograph. From the triumphs already attained by contact of the needle supports with only a few sectors of the diaphragm, there can be no doubt but many other sectors will yet be found and connected with the needle by additional "spider" legs, to bring the micro-phonograph to still greater perfection.

[1] Now with all the wonderful genius displayed by this inventor in utilizing the different sectors of the diaphragm, it is only fair to say that he has failed to give a scientific and philosophical explanation, satisfactory to himself, as to how it is possible for *this single needle-point, in retracing this single line* indentations in the wax cylinder, to reproduce all the marvelous acoustical effects of twenty or more voices and instruments in their complexity of pitch, intensity, quality, expression, etc. This he frankly admits he has been unable to do.

While the diaphragm, as we can now understand and as M. Bettini discovered, is originally acted upon and thus acts upon the needle by all the voices and instruments being directed against its different vibrational sectors corresponding in tension with the pitch, timbre, intensity, etc., of such individual tones, it is by no means such an easy matter to imagine or discover the true philosophical explanation as to how this same single, delicate needle point, in being again rubbed over this line of indentations, will reproduce loudly and accurately all the tones of a score of voices and instruments. And while it is no disparagement to the great inventor to say that he fails to solve this mystery of mysteries in acoustical science, it is but just to history here to place on record the fact that one writer alone of all contemporaneous scientific and philosophical investigators, has been able to accomplish this task. I here refer to Dr. Wilford Hall.

Mr. Robert Rogers, in speaking of the philosophical and scientific explanation of Dr. Hall's discovery regarding the phonograph, says: "Nearly two years ago, in the May number of *The Microcosm* (1880), under the head of 'Voice Pictures,' Dr. Hall printed a leading editorial by which he undertook a task he had contemplated for several years, of explaining the action of the phonograph, and also at the same time to account for the 'voice pictures' of Mr. Hughes, then creating a scientific sensation throughout the civilized world. It was this very problem of the hitherto inexplicable results of the needle-point reproducing spoken words by retracing its line of indentations in the wax cylinder, which Dr. Hall had the ingenuity to attack. And most remarkable to record, as an introduction to that unprecedented solution, he described in minute detail the very subdivisions of the phonograph-diaphragm into its small sympathetic sectors which must respond to the pitch, precisely as Lieut. Bettini was at that time mechanically working out!"

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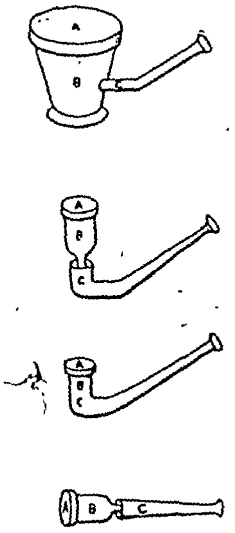
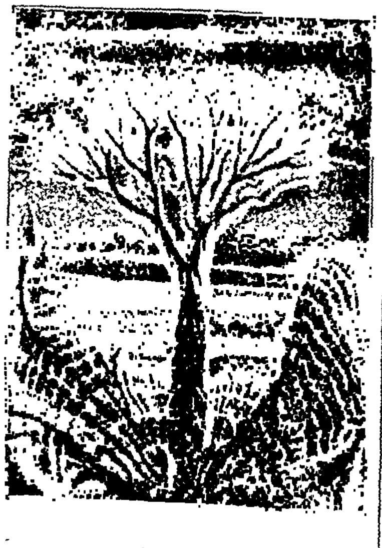
[1] The Microcosm, Vol. ix, February, 1892, Dr. Wilford Hall's explanation of scientific forecast.

"A more remarkable case of determining intricate, mechanical and scientific results by pure philosophical ratiocination, which could only be known surely by experimental tests, does not probably exist in the records of physical research, not even excepting the discovery of Neptune by the great French astronomer, Le Venier. Indeed, the location and discovery of Neptune were based upon clearly observed movements of other planets, while there was neither a movement nor an indentation within sight under the most powerful microscope, to indicate to Dr. Hall the ground on which his magnificent physical discovery was based."

"In Vol. 7 of the *Microcosm*, under the title of 'Voice Pictures,' is found not only the foreshadowing of the true mechanical action of the phonograph-diaphragm in the subdivisions of its surface into small nodes and sympathetic sections as practically demonstrated by Lieut. Bettini, but there will be seen in detail the only possible explanation of the muliform and multifold work of a single needlepoint—an explanation which has defied all previous attempts, and which M. Bettini declares he had not been able to discover, even after his experimental demonstration of the same.



The Eidophone.

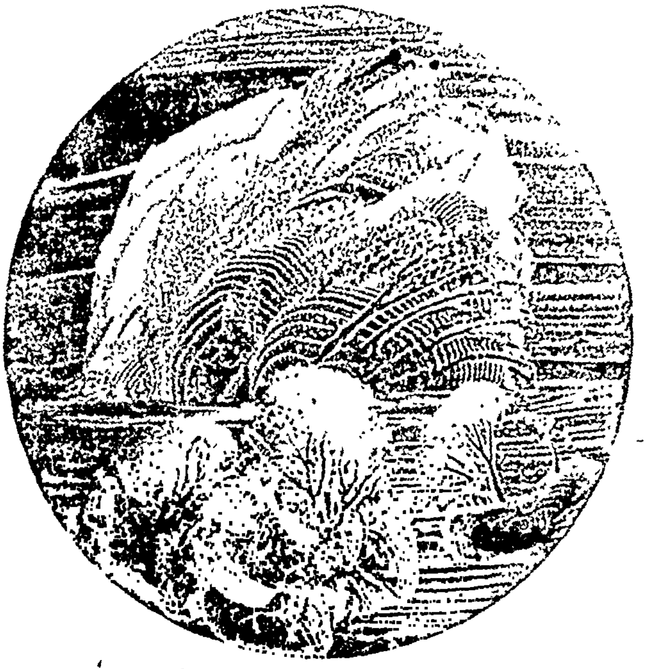


Tree Form.

In order to give my hearers and readers of this article an idea of this notable case of foreshadowing by scientific ratiocination alone, a philosophical result which could only be determined by experiment, I append here a few remarks from Dr. Hall's masterly editorial referred to:

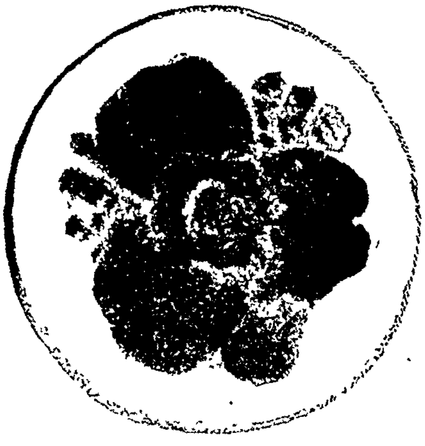
"It has been a marvel to thoughtful acousticians how the phonograph diaphragm with its central needle point was capable, under the action of the human voice, of mechanically reproducing that voice even to the most minute articulation and inflection of the spoken words. It is known to almost everybody that such a diaphragm, if spoken to with its central steel point bearing against a foil or wax cylinder revolved under it, will produce a line of hollows and ridges as the cylinder rotates while the vocal words are being directed against the diaphragm. Then if the needle be replaced in this groove of indentations at the start and the cylinder rotated as before, the friction of the needle point rubbing against the indented wax or foil, will cause the diaphragm to repeat its original vibrations so as to reproduce the very same words that were spoken against it, even to the slightest modulations of articulate speech.

"It has been roughly assumed by physicists that the whole thing was explainable by the action of air waves sent off from the vocal organs, thus causing the diaphragm to vibrate, thereby to make the vocal impressions in the wax by the point of the needle.



Seaweed or Landscape Form.

"We confess that this was our superficial view from a first examination, as we originally gave it in the 'Problem of Human Life.' But we wish it now distinctly understood that we have since revised our conclusions and repudiated air waves as having anything to do with the effects of sound known as sympathetic action upon diaphragms, tensioned strings or anything else. Indeed, we deny that a sounding instrument sends off air waves at all, even for a single inch, as a mechanical cause of the vibration of a sympathetic diaphragm such as that of the phonograph, mechanical telephones, etc.



Pansy Form.

"Sound waves, however, or sound pulses are sent off or may radiate from a sounding body, and such sound waves are pulses, not of air but of the sound force itself, which is really as substantial and objective, though immaterial as is electricity which will sliver a tree to splinters, or magnetism which will lift a piece of iron at a distance from a magnet.

"In the first place sound force is likewise assumed only to act sympathetically on a body in unison with its vibrational number; but while this is true it is also a fact that a tensioned diaphragm is really composed of many sections or subdivisions of tensional sympathy, each one of which is actuated by a tone of corresponding pitch or synchronism.

"This is proved by common experience in speaking to a tensioned diaphragm with light powder sprinkled over its surface, different varieties of pitch and peculiarities of tone distributing and arranging the powder differently according to the portions of the diaphragm most powerfully influenced by the given tone employed. And here is the sole explanation of the wonderful effects described in the beautiful achievements of Mrs. Hughes, Margaret Watts, which we have copied, by so pitching, directing and guaging the voice as to call into sympathetic action the minute tensional and unison portions of the diaphragm in such manner as to form the pictures of leaves, flowers, etc., by her peculiar distributions of the powder.

Serpent Form.

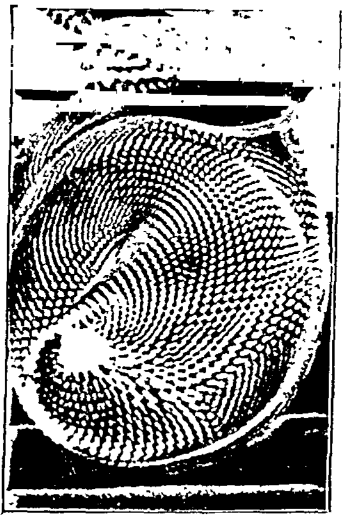
"Now it is manifest that no such sympathetic selection of tensional and unison portions of a diaphragm could be accomplished by mechanical waves of air, if such waves really exist, which dash bodily, like water waves, against the whole surface of the diaphragm whatever pitch of tone is employed, whereas, pulses of sound force can and will normally select such sections only of diaphragm as will sympathetically respond to their pitch, and thus will only move the entire diaphragm and its central needle-point incidentally by the more energetic movement of the sympathetic portion directly acted on by the sound.

"It is plain, if these analyses be correct, that such sectional vibrations of the diaphragm at all sides of the needle, according as the pitch and intensity of the tone should change, must give a slight wabbling or lateral movement to the needle point in its line of indentations as well as the appropriate varying degree of depth and distance apart of the individual impressions,

"Such a line of indentations composed of the requisite depths and alternate distances apart to correspond with the pitch and intensity of the producing sounds would also have for the needle point an almost infinitesimal lateral zigzag system of impressions, though too fine to be discovered under the microscope, by which the peculiar quality of the voice of the speaker and the articulation of words would be reproduced from the diaphragm when the needle should be caused to re-traverse the same line of indentations.

"By this forced lateral and zigzag tremor of the needle point the original sectional vibrations of the diaphragm that had actuated the needle would be reproduced, thus developing the same quality, pitch and intensity of the sound force originally liberated by a similar action of the vocal organs.

"That the needle point can and may actually produce the lateral zigzag indentations here claimed while producing the line longitudinal to the direction of the needle, and still too small to be perceived under the most powerful glass, as the real cause of the quality and articulation of speech, may rationally be inferred by the fact that the tuning-fork will liberate audible sound force when its motions are many thousand times too small to be detected under the most powerful microscope ever constructed. This was proved by our original discovery of a method for measuring the distance of a prong's travel even after sounding four minutes." (See the elaboration of that discovery by Capt. Carter, *Microcosm*, vol. iii, page 154.)



Cross-Vibration Figure.

During several years of practical application which I have given to the study of applying these two machines above alluded to, in the several sciences as well as making them to serve as an aid to medical science, I came to some positive conclusions which bore their own fruits, and which at the beginning of my studies were fully anticipated.

As a special department of medicine which involves the throat, nose, and chest diseases, I owe much to the aid already received from the phonograph and micro-phonograph. Naturally enough my practice brought me in direct contact with celebrated people and artists of high vocal culture and rank and with their already fully trained voices I began to make some investigations regarding the adoption of a standard of singing, speaking etc., for myself to judge from, with those whose training was not up to standard. Those excellent artists for instance whose records I have taken and possess, were those whose education in the art of singing accorded with various methods in vogue, such as are taught by the German, Italian and French schools, and certainly by repeating to oneself over and over again such phonograms one must become from many such comparisons a good critic in the art. It is astonishing to hear the differences in the methods that the special training of one of these schools gives to singers and also the ones to actors, elocutionists, etc., and more so again to compare those singers of a mixed school with those whose singing is simply naturally produced by their own efforts and training. What differences that wonderful tell-tale betrays! The music that is in the well trained artist rings forth its melody in its pure musical sound out of the indented pulse waves imprinted on the cylinders of the composition wax. Making these serve for comparative study with the lesser, natural and other voices, I have gained much profit in regard both to the different shades of tones and qualities possessed by their vocal organs.

It is known that with instruments made in exactly the same way, there is still perceptible, a certain difference in the shade, in the quality or the timbre of their tones. So we find it with the human voice. A certain standard is necessary in order to judge of the proper timbre-pitch and quality in a tenor, baritone and basso voice, as well as in a soprano, mezzo-*soprano*, *alto* and contralto. By bestowing some further experimental study on this subject, I am certain that shortly I will bring forward a standard as well as an additional new art to aid the learning of singing, speaking correctly the languages, elocution, acting and many other points connected with them.

Some of the records which served me for my purpose were taken from the celebrated tenors, baritones, bassos, and female voices of the New York Metropolitan Opera House, as Julius Perotti, Andreas Dippel, Carl Strietmann, Mr. Koppel, etc., Theodore Reichmann, Emile Steger, Conrad Belrens, Frl. Koschoska, Frl. Nicolini, Sig. Gorski, Mina Bertini, Helen Mora—famous contralto—Bertha Ricci, and many others less educated in singing and in the several arts. Amongst them for comparative study of elocution and acting were many celebraties from American, German, Italian and English stages.

As for the assistance derived from the phonograph and the micro-phonogrph in connection with the treatment of singers', actors', lawyers', clergymen's, etc., throats, noses and voices from a medical standpoint, they were of special use to me in phonograving their voices, when in what singers and actors call "good condition," and those were preserved for comparison in case any one of them should be taken with any ailment of the voice, thus making the normal record a standard to serve me to go by while under treatment and recovery. Also found them valuable in taking clinical phonograms for further study, as well as to demonstrate from. The following rule is one which I always adopt: To always take a record of any case that comes to me for medical relief, so that I may be able to judge of the progress of the gradual recovery of such a voice, etc., under treatment. There I have the extra aid to judge from, both the eye and the ear.

Recently I brought before the notice of the New York Medical Association by way of illustration, the project of taking and preserving records of specimen patients, which records would demonstrate a certain characteristic cough or signs,such for instance, as the whoop of whooping cough, asthmatic breathing in all its forms, stenosis of the larynx, due to whatever cause, and which is so evident in cases of cramp and diphtheria, also of the nostrils to any of their causes, the hoarseness of laryngitis, corditis, the rough breathing in tracheitis, nasal troubles, cries of babies at different periods of their growth. Stuttering, imperfect speech. To these latter two, much aid is gotten from the use of these machines as a tutor for correcting the difficulty. Sneezing, normal breathing as contrasted with the abnormal, etc. These cylinders or phonograms I have and propose to utilize as demonstrative evidence and illustration in the lecture rooms, to be added to the didactic and clinical methods of my teachings.

It is certain that students and men of our and other professions would gain more from one lecture in any branch of science, etc., thus aided by the phonograms, than from two dozen of the ordinary and prevailing ones. Cabinets may be arranged as libraries in which all kinds of records may be preserved either referring to or representing the different kinds of diseases of the throat, nose, chest, etc., and in their different stages. To such and other phonographic libraries many interesting features might be added. I am laying the first foundation to a phonogram library.

For many years I made use of the microphone, constructed on a special principle, for magnifying the sounds of the lungs, heart, throat and blood vessels, in their normal and abnormal states, and then recording them directly to the phonograph. Most interesting experiments have been its outcome. At the International Congress to be held at Rome in September, 1893, I propose to exhibit some medical micro-phonogram specimens.

Some experimental records were also made regarding the development of the natural or acoustic alphabet, but as yet I am not ready to submit a statement of any facts on account of the many difficulties still to be overcome.

Regarding the different methods of teaching which are in vogue in elocution, reading, reciting and acting, many very interesting and successful features were the outcome of these experiments and will prove valuable to those interested in those branches of study. Mr. Thomas A. Edison has interested himself in my behalf and regarding these studies, and has specially constructed for me a phonograph which has many new attachments besides some fine diaphragms on a new principle; with this aid I am now able to receive on its recorder the finest of tones and reproduce them. Hoping then to carry out further experimental researches which heretofore handicapped me by the want of proper mechanical appliances. But with such instruments as Mr. Edison has now placed in my hands, and the micro-phonograph, both which I possess as a gift from these inventors for my furthering the study already carried out, will beyond a doubt replace those appliances to any former ones in use.

With both these machines only success must follow my further research chiefly in the medical science.

Another great difficulty which has now been overcome by the Edison phonograph and Lieut. Bettini's micro-phonograph is the old one—that is, not even sacrificing the perfection of articulate speech to volume of sound. These are the latest additions made to them. The Bettini as well as the Edison machines, have become valuable instruments for teaching on account of their accurate reproduction and loudness.

Amongst some of the latest uses of the phonograph and micro-phonograph is one suggested by the daughter of Rabbi Brown, of Cleveland, that the phonograph and the micro-phonograph may be used to teach the blind to read. This Mr. Edison intends to utilize, and now is working out a method by which to reduce the size of the cylinders and yet increase their capacity. The recording needle is being reduced to half the size of the present one. The screw is made smaller so as to increase the revolutions of the cylinder. The number of words can thus be increased, with some extra alteration, to from 4,000 to 5,000 words, and the durability of these cylinders will be such as to be able to repeat the records 3,000 times. Experiments are now going on at the Edison laboratory, so that duplicates of any records may be made to any number.

Dr. H. F. Garey, of Baltimore, adapted the phonograph to the cure of deafness. He speaks of his success as being simply phenomenal, and considering the simplicity of the principle now, since it has been discovered, he is surprised that this adaptation of the phonograph for the cure of deafness was not earlier brought to light by the great aurists, whose reflected brilliancy has been shining down upon us. But it is a repetition of the same old story, proven again and again, especially in science and matters of invention, and in all great discoveries.

The principle is that the sound emanating from either the phonograph or micro-phonograph produces a massage of those parts of the ear which transmit sound to the brain, by giving continuous and successive vibrations at regular intervals. This it does with certain degrees of intensity and frequency, according to the exigencies of the case. In bad cases, a series of intensified shocks at the rate of one to the second is produced against the drum. In cases of not over five years' standing, the vibrations are given with more frequency and less intensity. This I believe is the proper caper, and records can be made to suit all kinds of cases, regarding the proper intensity of the sounds to be administered, in the same way as an electric current is given to a patient. All such records may be graded accordingly.

With some of the latest improvements of the phonograph it has been brought very near the point of perfection. It is much more simple, it is automatic in adjustment, efficient in action and easy of manipulation. An author can dictate chapter after chapter upon the cylinder by means of the phonograph, and the typewriter can put these into printed form with little trouble; thus one of these cylinders may be made to take scores of chapters and reproduce them for the press.

The phonograph has come much into use as assistant in dispatching correspondence, and it is not used in lieu of, but in connection with the stenographer. It has also come to reproduce the orations of our celebrated speakers, the recitations of skilled elocutionists and the fine effects of dramatic and vocal art.

As mentioned in my former article on this subject, as a teacher of all languages it has no equal, since it repeats with marvelous accuracy every word spoken into it with correct pronunciation, and records the finest variations and shades of sound with absolute precision.

It is a human photograph, as spoken of in *The Phonogram*, "beginning to inscribe one's words from the cradle and following one to the grave." Also has come to bring back the voice of the departed we love.

The latest use made of the phonograph is to receive messages on the telephone.

These machines have so many uses that the time is near when they will be as generally adopted as the sewing machine. What I have here spoken of is not an illusion, nor a future possibility, but that which is done each day, and as the advantages of modern electrical facilities are more appreciated, these machines will become more and more recognized factors in facilitating labor and aiding sciences in many thousand ways. I must confess that much can still be improved in them—but we are on the eve of the discovery of the final secret of the true scientific phonographs.

I would like to add in addition to these remarks that the phonograph, with its wonderful resources, is not the only instrument that Mr. Edison has added to the physician's armamentarium. In the early stages of the phonograph, great difficulty was found in procuring a battery which had the requisites for running the instrument in a safisfactory manner, and Mr. Edison, after trying every known species of battery in the market, evolved the Edison-Lalande cell, which possesses those requisites in a remarkable degree: inasmuch that it now stands before the public as the only perfect battery of the day. It was found so efficient in its work on the phonograph that it was determined to place it on the market for general purposes, and it has now been in use for upwards of three years by all the leading railroads in the country for telegraph work. Having heard that the medical profession were experiencing great difficulty in procuring satisfactory apparatus with which to administer general electrical treatment and for use in general surgical work, where the use of the electric current is necessary, Mr. Edison finally determined to adapt the battery for this kind of work, and the Edison Manufacturing Company have placed on the market a complete line of physicians' batteries, which I believe will fill a long felt want. The great requisites in a battery for medical work are the following:

1. Constancy of current, so that a physician can administer treatment with confidence that his battery is delivering a known quantity of electricity; and when it is used for running cautery knives and lamps there is no danger of the lamp or knife being burnt out, and thereby causing great annoyance to the operator. The Edison-Lalande battery has a current which is absolutely constant during the whole life of the battery.

2. No local action or waste when the battery is not in use. The local action in the Edison-Lalande battery is practically nothing, so that the battery can be left without any attention whatever, and will always be ready for work until the elements are entirely exhausted.

3. Long life. The Edison-Lalande battery in its different forms as used for galvanic and cautery work, will last the average physician a year or more, without recharging.

4. Cleanliness. The Edison-Lalande battery has no odor, nor do any salts form on the top; so that it can be placed in any convenient part of the office without destroying carpets, or causing instruments to rust from the fumes which are usually found in the batteries in use to-day.

5. Low internal resistance. The Edison-Lalande battery has practically no internal resistance, so that every particle of energy is utilized on work, instead of being partly exhausted before it leaves the battery.

The Edison Manufacturing Company have put up their batteries in handsome cases, and the equipment of each instrument is first-class in every respect. They have an exhibition here, and will be pleased to furnish any information that may be needed.

My only hope is that the next communication I make to our profession will be more fully in detail, and more profitable; thereby placing in their hands an appliance as an appreciable precision instrument to be made use of in our science.

118 E. Sixteenth St., New York City.

GYNECOLOGICAL OBSERVATIONS IN THE INSANE.

BY C. A. KIRKLEY, M.D.,
OF TOLEDO, OHIO.

The observations recorded in this paper were made at the Toledo Hospital for Insane during a part of 1890 and 1891, the opportunity being kindly given by Dr. H. A. Tobey, Supt.

Owing to the vicissitudes of politics, Dr. Tobey was succeeded by Dr. C. E. Tupper who kindly permitted the work to go on. To these gentlemen and their assistants is due the credit of facilitating in every possible way the difficult work. Acknowledgement is due Dr. Faber, one of the assistant physicians who kept a clinical record of the cases reported. Investigation in each case has been difficult, and it has been impossible to obtain reliable histories in some of them. In some cases patients had regained their normal mental condition sufficiently to give something of a correct history, but that concerning the reproductive organs in the application for admission to the hospital has been of little value. Such indefinite causes as "womb trouble," "menstrual derangement," "change of life," "child birth," etc., are usually given. While these indefinite conditions may have been factors in the production of insanity in each case, the special gynecological disease existing prior to manifestations of mental disease could only be guessed at. Whatever may be of interest in this paper therefore relates to existing disease of the reproductive organs, and the effect of its relief upon the mental condition rather than to the part those diseases play in the production of insanity. The annual report for the fiscal year ending Nov. 15, 1890, shows that of 130 first admissions, in 35, or nearly 27 per cent., the cause was attributed to some disease concerning the reproductive system, and for the year ending Nov. 15, 1891, of 130 first admissions 42, or more than 32 per cent. From these reports it is evident that a large proportion of insane women have gynecological disease, but whether these diseases produce or complicate insanity is not so clear.

June 1, 1892, there were 595 women in the hospital. Abdominal section had not been performed on a single patient so far as known, and only one case had undergone a gynecological operation. The patient was a dipsomaniac, and was suffering from complete prolapsus uteri. She was the mother of one child born five years ago, and for three years prolapsus had existed due in part to relaxation of the pelvic floor.

Since the birth of her child she became a physician and began practice, the child in the meantime dying. Domestic troubles also culminated in divorce from her husband. She was subject to attacks of violent headache at or near her menstrual time, and would resort to morphia for its relief, large quantities of that drug being necessary to control it. The severe headache was attributed in part, at least, to reflex causes. Tait's "perennial extension" operation was done resulting in complete relief of the prolapsus. Within about three weeks after the operation she was attacked with acute mania, which was more or less violent, and which lasted for about three months, and ended in apparently complete recovery. Whether the insanity was due to the combined effects of disappointment in life, grief at the loss of her child, the more or less habitual use of morphine and stimulants, and the constant irritation of the nervous system from the prolapsus, or to the operation, is impossible to determine, but it is reasonable to conclude that the operation may have produced the explosion, the other factors having played an important part.

That insanity exercises a peculiar influence upon the sexual organs of women there can be no doubt. This may also be said of insanity in men. Mrs. Etta Kelley, a faithful and competent attendant at the hospital, ascertained that of 595 inmates, perverted sexual function was known to exist in 230—nearly 39 per cent. This number admitted to her that they practiced masturbation whenever the opportunity presented itself, which, however, is not often, as the cottage plan upon which the hospital is built makes suitable classification possible, so that a patient is rarely alone. A singular fact is that most of these patients were either married or widowed, and still more surprising is the advanced age of most of them. No reliable data could be obtained as to the present social condition of many of them, but the age was ascertained in most cases:

Twenty-one were between the ages of 14 and 30; 68 between 30 and 40; 82 between 40 and 50, and 19 between 50 and 60. Only two were 14, two were 21, three were 20, and one was 22. One was 67, two were 70, and the age could not be ascertained in the remaining 29. It will be seen that the greatest number (82) practiced this unnatural habit within and during the climacteric period, and that comparatively few were among the younger women. This contradicts the frequently repeated statement that unmarried women and young girls are so given to this vice. The comparison between sane and insane in this way may not be accurate, but in defense of the former it may be said that it does not prevail to that extent that is commonly supposed, and it is extremely doubtful if any pure-minded young girl has the slightest idea of sexual desire previous to her marriage. The truth of this proposition may be questioned, and it is admitted that it is not easily proven, but it is based upon the fact that the sexual desire in women is latent as a rule, and that its actual existence, varying, of course in intensity in different women, is the result of development. Physicians are not unfrequently consulted both by young husbands and wives concerning the want of sexual desire on the part of the wife, who confesses that she has never experienced that desire as she is aware of its existence in others; that she is entirely passive, and submits to the approach of her husband only to gratify him. This uncultivated instinct in woman-kind fortifies her naturally stronger moral sense, the better qualifying her to fill her exalted position in life. A friend in discussing this subject, suggests that the young girl "does not encourage the desire, she is not tempted in any way to gratify it. It does not disturb or control her, but may she not feel it at times? The normal desire becomes abnormal under abnormal excitement and then she may reach the point of mental danger." That some girls may have experienced the desire before marriage, without having been excited may be true, but those instances are probably exceptional. The ungratified desire induces the habit of masturbation, and there is no reason to believe that the vice exists more frequently among sane than insane girls, and when it exists in the latter it is rather the result than the cause of the mental disorder.

It is a notable fact that religion as a cause of insanity goes hand in hand with sexual perversion, the reason, no doubt, existing in the emotional character of each. The foregoing statistics would suggest that whatever the cause may be that produces the mental disorder, it so disturbs, and perhaps stimulates those nerve centers that control the sexual desire, that masturbation is the result. Idleness and solitude, of course foster this vice.

The *Medical Record* of May 21, 1892, contains an interesting letter on the insane in Egypt, by Dr. H. F. Peterson, of New York, who informs us that nymphomania is very common among insane Egyptian women, and that clitoridectomy is performed on every Egyptian woman at an early age as a religious rite, which, however, does not seem to lessen the number among insane women with sexual element complications. Almost every patient has an excuse for the practice of this habit, which is only interesting as a curious delusion. One says that unless she does so she cannot urinate, another that certain women become men who outrage her, another that she was disappointed in love, etc. These patients have a strange propensity for putting foreign things into the vagina. On examination at one time a spool of thread, a stick, some paper, a piece of glass and a string were found. The patient was about 55 years old.

Many difficulties are encountered in ascertaining a correct clinical history, and the physical condition of the sexual organs in the insane. The record taken upon admission is the only reliance, as very few patients can give anything like a correct one of themselves, and one's own ingenuity must be relied upon for finding out the physical condition. Some patients actually refuse to be examined at all, others submit only under protest, and therefore constantly struggle, while in other cases in which the indications of uterine disease are quite evident an examination can only be made under anæsthesia. Reports have appeared from time to time concerning the effect of gynecological treatment upon the mental condition. Marvelous and in some instances magical effects have been reported. Within a year a case was reported in a Western medical journal, that had been insane for years. The attending physician removed the uterine appendages with a view of curing the insanity. Immediately upon recovery from the anæsthetic the mental equilibrium was restored, and had remained so ever since—a period of several months.

The results of treatment in the cases herein reported do not sustain the position that the normal mental condition is restored upon the disappearance of the gynecological disease. Seventy-five cases were treated during the period of observation, and the following are given as a type, with the result of treatment upon the mental condition in each case:

Case 1.—J. C., an Englishwoman, 44 years old, married but has never been pregnant. Has been insane four years, cause unknown. The cervix uteri was eroded and the cervical endometrium inflamed. The treatment was by curetting and the topical application of tinct. iodine and carbolic acid, as recommended by Dr. Skene, of Brooklyn. Due attention was of course given to the general health. The disease entirely disappeared and the general health greatly improved. Within a year after treatment it was ascertained that the mental condition had only slightly improved, though the patient was apparently well physically.

Case 2.—N. B. O., American, aged 25, unmarried, insane a year. The record gave heredity as the predisposing, and her mother's death as the exciting cause. The type of insanity was suicidal melancholia. She was treated for chronic endometritis, complicated by acute vaginitis probably of specific origin. The disease entirely disappeared within a few weeks, and her mental condition so much improved that she was discharged.

Case 3.—K. S., Irish, 26 years old, married, the mother of one child 18 months old. She had been insane four months, the attack coming on very soon after a miscarriage, being in very feeble health at the time and very anæmic. "General debility" was given as the predisposing cause. The form of insanity was acute melancholia. The uterus was enlarged from subinvolution, retroverted, and there was unilateral laceration of the cervix extending to the vaginal insertion. The laceration was repaired, potassium iodide given, hot water vaginal douches employed twice a day, and the displacement corrected as much as possible with a glycerine tamponade. The uterine disease was entirely relieved in due time, and her normal mental condition was completely regained. Nine months after leaving the hospital she was still in good health. The prompt recovery from insanity in this case can be directly attributed to the cure of the uterine disease.

Case 4.—A. F., American, aged 33, married, mother of three children, had been insane five years. Her record gave "child-bearing" and "anæmia" as the exciting causes, but the predisposing cause was not given. She had chronic endometritis and unilateral laceration of the cervix. The uterus was curetted and the laceration repaired. The operation accomplished all that could be desired as far as the uterine condition was concerned, and the general health somewhat improved, but a year afterward her mental condition remained unchanged.

Case 5.—M. S., German, aged 24, married, no children, had been insane a year. Syphilis was given as the cause of her insanity. She was suffering from an acute vaginitis, of probably specific origin, which had extended to the endometrium. A solution of silver nitrate, 30 grs. to the oz., was applied once a week to the inflamed surfaces, and hot water vaginal douches were employed night and morning. Constitutionally she was given ¼ gr. doses of the mercuric protoiodide. She completely recovered from the disease and her physical health very much improved. There was also slight mental improvement, which, however, was only temporary. This was probably a case of syphilitic insanity, a cerebral lesion no doubt existing. The pelvic disease, therefore, was purely incidental.

Case 6.—M. E. M., German, 45 years old, married, never pregnant, had been insane twelve years with chronic melancholia. The exciting cause given in her record was domestic trouble, and the predisposing heredity. She suffered from complete procidentia uteri. Elytrorrhaphy was done upon the anterior vaginal wall, the sutures being of silk worm gut, and the perineum was extended forward after Tait's method. There was not the slightest union in the perineal incision, or possibly it may have been separated by pressure from the impacted rectum, which the nurse had not discovered. The recto-vaginal septum, and the outer wall of the vagina, however had become a granulating surface, over which the edges of the skin were again coaptated after deundation, and secured with silver wire sutures. Perfect union and complete cure of the procidentia was the result. For two or three months the mental condition markedly improved, but a relapse occurred which left the patient but little, if any better than before the operation.

Case 7.—M. S., Irish, aged 53, married, no children, had been insane ten years. Cause of insanity unknown, type chronic melancholia. The uterus was normal and the abdomen very much enlarged from an ovarian cyst. Ovariotomy was performed from which she made a good recovery. On the afternoon of the day of the operation the nurse had occasion to go into an adjoining room. Though only absent two or three minutes, when she returned the patient was at the other end of the hall, a distance of 30 feet. Fortunately no harm resulted. Her general health greatly improved, but there was not the slightest improvement mentally.

Case 8.—M. M. B., American, aged 38, married, never pregnant, insane three years, and religious excitement given as the exciting cause. Type of insanity recurrent mania. She suffered from dysmenorrhœa, due to stenosis of the cervix uteri. This was treated by rapid dilatation, and repeated after the second menstrual epoch, she improved sufficiently to return to her home, but after two or three months she relapsed into the same insane condition, though the dysmenorrhœa was permanently relieved.

Case 9.—M. L. D., American, aged 40 years, married, mother of one child ten years old, had been insane six months with acute mania. Her record showed "uterine trouble" as the predisposing, and "menstrual irregularity" as the exciting cause. She suffered from chronic endometritis and papillary angiomata within the urethra. The uterus was curetted, and drained with iodoform gauze, the growths snipped off with scissors, and the pacquelin cautery applied. She completely regained her mental and physical health. A report from her six months afterward stated that she had not been so well during her married life. In this case the exciting cause can fairly be attributed to the urethral disease, existing in an anæmic and debilitated patient. A disease more harrassing, and capable of producing a more complete wreck of a woman's nervous system seldom occurs. Disordered menstruation is the rule among insane women. Very few menstruate regularly and naturally, and some do not menstruate at all. The general health is usually broken down, and nutrition, of course, very much impaired. A diseased nervous system coëxisting with such a condition would naturally disorder the menstrual function. Scanty menstruation is the rule, but menorrhagia sometimes occurs, when it is generally due to uterine disease.

While disease of the sexual organs exists in a large proportion of insane women, the effect upon them of the cure of those diseases hardly establishes any direct relation between the two conditions, except in occasional instances, and when that relation exists disease of the sexual system is often rather a result than a cause. The relief of any coëxisting disease in an insane woman, whatever it may be, will be of benefit to her mentally just in proportion as her general health is improved. Pathological conditions are very much the same whether they exist in the sane or insane. Functional insanity may, of course, result directly from disease of the procreative organs, but that different types of chronic insanity are very frequently the result of those diseases may be questioned. The nerves and blood vessels are intimately related to the cerebral cell, and may interrupt or even prevent its development or reparation. For its life it depends upon the parent organism, and the cause of its perpetual change must exist in some way within the nerves or capillary blood vessels or both. Stimulation beyond the possibility of repair results in injury to the cell, therefore a pathological condition must result which interferes with the functions of the brain and insanity follows. Diseases of the reproductive organs in insane women and their management presents a vast opportunity for the gynecologist, and further observation will no doubt establish the exact relation existing between those diseases and insanity. Every insane hospital should have its gynecologist, not only to provide better care for this unfortunate class of patients, but to lighten the burdens and cares of the superintendent, who in most institutions has more than his share. The future for gynecology in this field is full of promise.

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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(*Continued from page 528.*)

Case 47.—*Archives of Otology*, March 1882. Treated by G. S. Munson, of Albany, N. Y. Female, age 39. Left ear, chronic otorrhœa, has had partial left facial paralysis. Pain in left ear, vomiting, tinnitus aurium, no mastoid symptoms. Convulsions, right-sided headache, deafness, eustachian tubes closed, polypus in tympanum; its removal refused. November 15. Greater pain, delirium, unconsciousness, high temperature and pulse, coma. Convergent strabismus. left eye, iris unresponsive. Death.

Autopsy—Polypus of ex. meatus, semicircular canals carious. Abscess of middle lobe of cerebrum, directly above the semicircular canals, and an opening in the meninges and brain tissue connected the semicircular canals and the abscess.

Case 48.—*Lancet*, August 13, 1887. Treated by J. P. Gray. Age 26. Chronic otorrhœa, pain in and behind ear, facial paralysis, fever. Apathetic, half-comatose, paralysis and anæsthesia of left leg, delirium. Mastoid opened; no pus. Coma, hemiplegia, hemianæsthesia, death.

Autopsy—Right cerebral hemisphere covered with pus. Perforation of dura mater upon posterior surface of petrous bone, carious opening through roof of tympanum, abscess between dura mater and petrous bone.

Case 49—Transactions American Otological Society. Treated by O. D. Pomeroy. Otorrhœa; death.

Autopsy.—Abscess (diffused) of anterior and upper third of right lobe of cerebellum, carious condition of tympanum, carious opening through roof of tympanum.

Case 50.—*Archives of Otology*, June, 1889. Treated by James Finlayson and Thomas Barr. Male, age 22. Right ear, chronic otorrhœa, acute exacerbation, fever moderate, giddy, pain in jaw and behind ear, vomiting, chills, pain in frontal and occipital regions, pain in back, head retracted, right facial paralysis, constipation, stupor, vomiting, death.

Autopsy.—Congestion of pia mater, purulent exudation in frontal convolution of both sides, purulent fluid at base, in the region of the medulla. Brain adherent near right internal auditory meatus; the extreme anterior end of right cerebellum necrosed. Purulent inflammation at base of brain, granulations in tympanum and mastoid antrum, malleus and incus gone. The facial nerve was much disorganized and denuded of its bony covering by caries.

The mastoid cells, with the exception of the antrum, were obliterated and converted into a sclerosed mass. Pus in the antrum, caries of tympanum, auditory nerve disorganized, cribriform lamina destroyed by caries. On the upper part of the petrous bone a caries aperture communicated with the cochlea. Bone over the superior semicircular canals was carious.

Case 51.—British Medical Journal, Dec. 11, 1886. Treated by B. Gowers and E. Barker. Age nineteen. Right ear. Chronic otorrhœa; pain in and around ear; fever; bilateral optic neuritis; vomiting; unequal pupils; mastoid opened; improvement, but still unequal pupils, and optic neuritis persisted; again vomiting; stupor, insomnia, delirium, fever and chills.

Operation.—Skull trephined one and one-fourth inches behind and one and one-fourth inches above the centre of the meatus, or, in other words, at the lower posterior angle of the parietal bone, near the squamous suture.

Antiseptic precautions were taken. An aspirator needle was introduced into the temporal lobe, inward, forward and downward, and pus evacuated. The opening was enlarged. The brain debris was removed. A drainage tube was employed.

The after-treatment consisted of irrigations with boracic acid solution. Recovery.

Case 52.—Archives of Otology, Vol. 12, No. 1. Treated by H. Knapp. Male, age thirty-nine. Right ear. Acute purulent otitis; pain in ear and head, especially in the right occipital region; later, pain, swelling and fluctuations in left occipital region; incision at this point: pus liberated; bone denuded; wound kept open; improvement. After a time patient became worse. It was ascertained that the pus in the occipital region came from the interior of the skull. Frontal headaches; insomnia; nausea; pale; chills; fever; swelling below original opening; incised; pus found; drained; some improvement; patient became worse again; optic neuritis both eyes; another swelling appeared, upward and backward from original opening; incised; pus found; drained; probe passed into cranial cavity; pain in right side of forehead; nausea; vomiting; delirium; coma. Death.

Autopsy.—The openings in the skull referred to in the history of the case were found. At the outer surface of the lateral sinus a thick streak of pus led along the transverse sulcus to a large collection of pus at the lowest part of the sigmoid fossa. Pus in mastoid cells and tympanum. Abscess in middle and outer part of the little brain. Not encapsulated.

Case 53.—Archives of Otology, March, 1880. Treated by H. Steinbrugge. Male, age fifty-eight. Right ear. Chronic otorrhœa; vertigo; pain in right parietal region and ear; neuralgia in third branch of right trigeminus; cholesteatomatous masses in meatus and middle ear; left arm and leg partially paralyzed; impaired vision; constipation; coma. Death.

Autopsy.—Fluid blood in all sinuses. Pia-mater congested. Right temporal lobe adherent to petrous bone. Abscess in right temporal lobe. Encapsulated. Surrounding brain substance sclerosed. Left optic nerve atrophied. Perforation through right petrous bone (anterior surface) and dura-mater. Carious opening in semi-circular canals. Drum-head and ossicles gone. Tympanum badly necrosed, so that it and the mastoid antrum are thrown into one cavity, all filled with cholesteatoma.

Case 54.—Breslauer Aerztl. Zeitschr., No. 9, 1879. Treated by Otto Binswanger. Male, age fifty-one. Right ear. Neither discharge from his ears nor deafness has been observed; fever; loss of appetite; vomiting; paralysis of left arm; epilepsy; chronic convulsions; right pupil dilated.

Autopsy.—Abscess in right first frontal convolution. Encapsulated. Roof of right tympanum inflamed. Granulations in right tympanum and mastoid cells. Drum-head destroyed. Ossicles intact.

Case 55.—Archives fur Ohrenheil, 1879, No's 11 and 12. Treated by E. F. Kretschy. He publishes three cases of fatal purulent inflammation of the middle ear; histories not given.

Autopsy.—Thrombus purulent in left transverse sinus. Pus in jugular sinus, and a defect in its anterior wall, led to the necrosed petrous bone. Cholesteatoma in the tympanum. Fibrous tissue about jugular vein infiltrated with serum and pus.

Case 56.—Archives fur Ohrenheil, 1879, No's 11 and 12. Treated by E. F. Kretschy.

Autopsy.—Purulent infiltration of inner membranes of brain.

Case 57.—Archives fur Ohrenheil, 1879, No's 11 and 12. Treated by E. F. Kretschy.

Autopsy.—Abscess in left cerebellum.

Case 58.—Treated by Burckhardt. Female, age nineteen. Left ear. Chronic otorrhœa. Died of meningitic symptoms after an illness of sixteen days.

Autopsy.—Left trigeminus acousticus and facialis imbedded in pus. Purulent pia-mater. Thrombus in superior sinus. Caries of petrosal sinus canal. Polypus in tympanum. Mastoid cells absent.

Case 59.—Treated by Burckhardt. Age two and three-fourths. Death from tubercular meningitis.

Autopsy.—Partial necrosis of left wall of lateral sinus. Thrombus in lateral sinus. Carious openings of bony walls of sulcus transversus.

Case 60.—Treated by Burckhardt. Female, age seven and one-half.

Autopsy.—Ossicles gone. Caries of mastoid process. Caries of lower wall of parietal bone.

Case 61.—Treated by Burckhardt. Female, age two and three-fourths.

Autopsy.—Multiple caries on skull. Left drum-head gone. Malleus and incus gone. Necrosis of mastoid process.

Case 62.—Archives of Otology, December, 1879. Treated by Arthur Hartman. Female, age thirty-four. Left ear. Chronic otorrhœa; occasional acute exacerbations; painful mastoid; fever and chills: pain in left temple; delirium. Death.

Autopsy.—Anterior left hemisphere covered with pus, which extended to the base of the brain. Dura-mater over left tegmen-tympani was discolored and pierced by a few openings, beneath which a cavity full of pus was seen. The pus being removed, the tegmen was found to be perforated by a few small orifices which led into the tympanum. An abscess in the brain was discovered, corresponding in situation with that over the tegmen, and extending into the lateral ventricle, which, with the right and middle ventricle, was filled with pus. The spinal cord was surrounded by pus. Polypus in tympanum and some necrosis in that space. Both tegmen and antrum were perforated by small openings which led into the middle cranial fossa. Sclerosis of mastoid.

Case 63.—Archives of Otology, December, 1879.

Treated by Arthur Hartman. Male, age thirty. Left ear. Chronic otorrhœa; violent pain in left half of face, which led to facial paralysis; later, the pain involved the entire head; polypus in left middle ear; temporal bone not especially painful. Death.

Autopsy.—Purulent meningitis of posterior cerebral fossa, and an abscess in left cerebellum. The bony wall of facial canal carious. Caries of semicircular canal. Sclerosis of mastoid.

Case 64.—*Archives of Otology*, December, 1879. Treated by Arthur Hartman. Male, age thirteen. Right ear. Chronic otorrhœa; meningitis; swollen mastoid; Wilde's incision; pus liberated; delirium; coma. Death.

Autopsy.—Pus patches over brain surface. Pus at base of brain, especially at right cerebellum. Abscess in middle cranial fossa. Pus at sella turcica and left middle cranial fossa. Necrosis of tegmen-tympani. Tympanum carious. Mastoid sclerosed.

Case 65.—*Lancet*, June, 1880. Mr. Field. Male, age eighteen. Right ear. Chronic otorrhœa; pain in head. Death.

Autopsy.—Suppurative meningitis over right petrous bone. Inner mastoid surface at lateral sinus carious. Thrombus in lateral sinus. Abscess of right tempero-sphenoidal lobe and occipital lobe. Abscess in right cerebellum. Incus and stapes gone.

Case 66.—*Archives of Otology*, March, 1880. Treated by T. R. Pooley. Male, age forty-five. Left ear. Blow on left side of head, followed by deafness and otorrhœa; painful ear; tinnitus aurium; drum-head perforated; mastoid swollen, red and painful; mastoid opened; pus found; not much fever. Death.

Autopsy.—Abscess in left middle lobe. Left-sided pachymeningitis. Petrous bone carious, especially outer half of middle surface. Pus in lateral ventricle of right side of brain.

Case 67.—*American Journal of Otology*, January, 1881, page 26. Treated by C. S. Rodman, of Waterbury, Conn. Male, age twenty-one. Right ear. Chronic otorrhœa; occasional acute exacerbations; mastoid symptoms; mastoid opened; pus found. Death.

Autopsy.—Meningitis. Pus in neck between mastoid and styloid process. Mastoid carious. Caries in the inner plate of mastoid, at sulcus of lateral sinus. Caries of squamous. The lower surface of mastoid had three carious perforations in the groove next the tip of the mastoid in the digastric fossa, all communicating with the carious mastoid cells. Caries of mastoid antrum.

Case 68.—*Deutsche Medical Wochens.*, 1890, No. 48. Treated by E. Hoffman. He discovered in the course of an operation for mastoid abscess, an abscess in the occipital lobe, which he opened. Recovery.

Case 69.—*Dublin Medical Journal*, July, 1890. Treated by R. G. Patterson. Pyæmia, following a suppurating ear.

Autopsy.—Thrombus in the lateral sinus.

Case 70.—*Archives fur Ohrenheil*, March 18, 1879. Treated by Burckhardt-Merian. Female, age nineteen. Left ear. Chronic otorrhœa; meningitis. Death.

Autopsy.—Left circumscribed basilar meningitis. Fistula between mastoid antrum and superior petrosal sinus. Polypus in tympanum. No mastoid cells.

Case 71.—*Archives fur Ohrenheil*, March 18, 1879. Treated by Burckhardt-Merian. Left ear. Chronic otorrhœa.

Autopsy.—Caries of tympanum, antrum, mastoid cells and osseous wall of lateral sinus. Thrombosis of lateral sinus. Tubercular meningitis.

Case 72.—*Archives fur Ohrenheil*, March 18, 1879. Treated by Burckhardt-Merian.

Autopsy.—Caries of tympanum and antrum. Carious opening through outer wall of mastoid. Caries of parietal bone. Meningitis.

Case 73.—*Archives fur Ohrenheil*, March 18, 1879. Treated by Burckhardt-Merion. Chronic otorrhœa.

Autopsy.—Necrosis of antrum and squamous. Meningitis.

Case 74.—*Medical Times and Gazette*, May 8, 1880. Treated by Johnson. Male, age fourteen. Right ear. Chronic otorrhœa; chills; headache; thoracic pains; unsteady gait; constipation; night sweats; pupils dilated; delirium; temperature and pulse not high; coma. Death.

Autopsy.—Double pleurisy. Pus in lungs. Pus in right internal jugular vein. Abscess at apex of petrous bone. Necrosis of petrous bone near labyrinth. Blood coagulum in sigmoid sinus. Pus in tympanum.

Case 75.—*Medical Times and Gazette*, May 8, 1880. Treated by Henry Thompson. Female, age twelve. Right ear. Tuberculous; chronic otorrhœa; headache; vertigo; vomiting; dilated pupils; temperature and pulse not high; chills; involuntary defecation; cough; thoracic pains; coma; convulsions. Death.

Autopsy.—Congestion of pia-mater. Right cerebellum adherent to dura-mater. Abscess in right cerebellum. Tubercular deposits in brain. Pus in right half of posterior occipital fossa. Pus in right sigmoid sinus. Thrombus in right internal jugular vein, sub-clavian vein, vena-cava and right auricle. Lungs abscessed. Tympanic cavity, vestibule, and semi-circular canal filled with pus.

Case 76.—*Archives of Otology*, December, 1888. Treated by Henry Ferrer, of San Francisco, California. Male, age sixty. Mastoid abscess; opened mastrid. Death from hematemesis.

Autopsy.—Pus and granulations in mastoid cells and tympanum. Meningitis.

Case 77.—*Archives of Otology*, December, 1888. Treated by Lewis, of Birmingham, England. Mastoid abscess. Death.

Autopsy.—Abscess in tempero-sphenoidal lobe.

Case 78.—*Archives of Otology*, December, 1888. Treated by Lewis, of Birmingham, Ennland. Mastoid abscess. Death.

Autopsy.—Phlebitis of lateral sinus.

Case 79.—*Archives of Otology*, December, 1888. Treated by Thomas Barr, of Glasgow. Male, age twenty-one; left ear; chronic otorrhœa; headache; slow and intermittent pulse; normal or sub-normal temperature; contraction of left pupil; paresis of all ocular muscles excepting external rectus; partial right facial paralysis; paresis of right arm, with wrist-drop; mastoid opened; no pus found; skull trephined above the external meatus; brain tissue pierced with trocar; pus found; cavity irrigated; chicken-bone drainage tube; antiseptic dressing; dressing not removed for three weeks; the opening filled in with bone. Recovery.

Case 80.—*Archives of Otology*, December, 1888. Treated by Roosa, of New York City. Female, age forty-two. Left ear. Advanced Bright's disease; acute otitis; drum-head lanced; pain and tenderness at junction of temporal and occipital bones; temperature moderately high. Death.

Autopsy.—Caries of tympanum. Pus in middle ear. Seventh nerve exposed and imbedded in pus. No mastoid disease. Meningitis.

Case 81.—*British Medical Journal*, April 14, 1888. Treated by Arthur E. Braker. Male, age thirty. Right ear. Chronic otorrhœa; lateral sclerosis of spinal cord; acute exacerbation; pain in right half of head; vomiting; epilepsy; contraction of right pupil; mastoid opened; no pus; rapid emaciation; incontinence of urine; stupor; somnolence.

Diagnosis.—Abscess in tempero-sphenoidal lobe.

Operation.—Parietal bone trephined; dura-mater incised; no pus; trephined again one and one-half inches above and one and one-quarter inches behind the external meatus; a needle was passed one and one-half inches deep, forward and inward; pus found; rubber drainage tube; iodoform dressing. Recovery.

Case 82.—*New York Medical Journal*, February 25, 1887. Treated by Abbe. Acute otitis media; acute meningitis; choked disc on same side. Death.

Autopsy.—Purulent meningitis at base of cerebrum and lower surface of cerebellum. No evidence that pus had extended from the ear. The internal auditory canal showed streaks of pus, following the course of the nerve.

Case 83.—*Archives fur Ohrenheil*, vol. 26, page 84. Treated by Schmiegelow, of Copenhagen. Male. Right ear. Chronic non-suppuration; inflammation of the middle ear; suddenly seized with neuralgia of all three branches of right trigeminus, followed by right facial paralysis; right choked disc; later, purulent otitis; pain; mastoid inflammation; mastoid opened; pus and granulations found; œdema of right side of face; skull trephined at posterior cranial fossa; no pus; mastoid opening enlarged backward; improvement; later, nausea; fever; headache; vomiting; unconsciousness. Death.

Autopsy.—Diffuse purulent lepto-meningitis. Abscess in temporal lobe of cerebrum.

(*To be continued.*)

CASES ILLUSTRATING THE MODERN TREATMENT OF WOUNDS, AND THE PRINCIPLES OF ANTISEPTIC SURGERY.

Clinical Lecture delivered Oct. 1, 1892, before the Clinical Class at the Pennsylvania Hospital.

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Gentlemen:—This morning I begin my twenty-ninth annual course of clinical lectures in this hospital. I cannot do better than to devote the first part of my hour to day to the consideration of the method which I will follow in the treatment of wounds. Before showing you any cases, therefore, I propose making a few remarks upon the principles of antiseptic surgery, which we endeavor to carry out in all our operations. To some of you who have been in attendance upon these lectures in previous years, our practice here is well known; but others are here for the first time and are just commencing their studies; to these I may explain briefly the theory and practice of aseptic surgery, which will avoid the necessity of repetition and of going over the same explanation time after time after every operation during the winter, Moreover, even those to whom the antiseptic dressings are no novelty may not thoroughly appreciate the principles involved, and when they attempt to practice this system for themselves they may overlook the essential part and meet with disappointment. This is very frequently the case with physicians who think that they understand how to practice antiseptic surgery, and get unsatisfactory results, which tend to bring modern wound treatment into discredit while the fault lies entirely with themselves.

For many years, I have been using antiseptic methods in the treatment of injuries and wounds after operations, and since it was first introduced into this hospital a number of years ago, I cannot say that there has been any decided change in our methods; the results have always been so satisfactory that there has been no need of change. During this period, it is true, many minor modifications and supposed improvements in detail have been brought out by surgeons; but I cannot say that I consider them as possessing real advantage. For instance, one surgeon will bake his knives for two hours before operation; another will use only dry dressings upon wounds; still another will have some special antiseptic like biniodide of mercury or lysol; but I have not found it necessary to depart from the original methods whose value has been established by many years' experience. The antiseptic method has for its object the preservation of an aseptic condition of wounds. You may ask "Why is this necessary." Let me state at once that suppuration is a fermentation or putrefaction which goes on in wounds and which the antiseptic system is designed to prevent and protect from. Three elements are essential in order to produce this species of infection: 1. Warmth. 2. Moisture. 3. Germs.

Now, if we can exclude the germs, putrefaction will not occur, even though warmth and moisture are present; and in the same way if either of these are missing, there will be no putrefaction, even in the presence of the germs or bacteria, which, by the way, are generally present in the air, which carries them to the surface of the wounds or other places where they meet warmth and moisture, and the combination being complete, they rapidly increase. Precautions may be taken to prevent this combination so that putrefaction cannot occur, for without bacterial growth there can be no putrefaction or suppuration. Let me give you a homely illustration of this fact. Here is a case of condensed milk, which is hermetically sealed. Here is warmth and moisture; but the bacilli of the air are excluded and it is impossible to ferment as long as it is sealed up; if it were to be opened, however, and the air allowed to enter, its contents would soon be attacked by putrefactive germs, which now are excluded. Here, I give you another illustration in a piece of jerked or dried beef. The bacteria can get at it and warmth is here, but no moisture, consequently it remains sweet; if it were placed in a bucket of water, it would be attacked by bacteria in a few hours. On the other hand, when we wish to preserve food in summer time we place it on ice, or in a cold place, and the germs and moisture cannot affect it in the absence of the necessary degree of temperature. The art of preserving food by excluding germs, as in canned meats, is not altogether new since jars of preserves have been found in Pompeii, which, being hermetically sealed, had kept their contents sweet for centuries. It is evident that the ancient inhabitants of Pompeii appreciated the fact that heat and moisture would not produce fermentation, and that if the germs were excluded the preserves would keep. Then if we exclude the germs there will be no putrefaction; if we exclude moisture, there will be no putrefaction; and if we exclude warmth, there will be no putrefaction. Now, we have the germs in the air, everywhere around us. If we expose an unprotected raw surface for a very short time, germs will be deposited and in the presence of warmth and moisture, they rapidly multiply, and we will have set up the condition of suppuration, which is a form of septic infection of a wound. To prevent this infection is the problem of antiseptic surgery. In the living body, we must have warmth and moisture, we are obliged therefore to direct our efforts towards the exclusion of the germs and to the prevention of their growth by means of antiseptics.

You may ask, "What are antiseptics?" In brief, they are agents which destroy the vitality of germs. We have many remedies of this kind at our command, and new ones are constantly being introduced, but we have held fast to the one we first used, the bichloride of mercury, in solution in distilled, or recently boiled and filtered water. It is true that objections have been raised to its use because it occasionally causes irritation in a delicate skin and when freely used upon a large wound it may be absorbed and produce symptoms of mercurial poisoning; occasionally a nurse who has her hands frequently in it may be affected by it and have to lay off for a couple of weeks or so, but with ordinary care such accidents rarely happen. *Of course, in abdominal* operations, we do not use bichloride solutions; if we should sew up the abdomen and leave a couple of ounces of this solution within the peritoneal cavity, we would surely have mercurial bichloride poisoning; but for general use on the *surface of the body* and for small wounds, no such accident *need be thought* of. For the preliminary washing off of the skin a solution of $\frac{1}{1000}$ is used; for wounds a solution of $\frac{1}{2000}$ or $\frac{1}{4000}$; except in poisoned wounds, where we may apply a solution of $\frac{1}{500}$.

Here is an illustration of the *application of this* system, in the patient now before you:

"Frank B., 14 years of age, a well developed boy, who was injured by machinery on Sept. 23, and was at once brought into this hospital. *His left arm* was crushed and the tissues lacerated *nearly up to* the shoulder. On the day of admission, amputation was performed in the upper third of the arm. Previous to the operation the surface of the skin of the injured arm was scrubbed clean with *soap and* water, and afterwards washed with ether and finally with bichloride solution." The stump is a little ragged because I had to make the most of what tissue was left. The dressings applied a week ago, I will now remove. You notice there is a little *moisture due to* oozing from the wound, but not a drop of pus. The wound is perfectly sweet. My only *object in* exposing the wound now is to remove the *drainage tube* which was put in at the time of operation in order to prevent retention of the secretions in the deeper parts of the wound, and which being no longer needed can be removed and the wound *allowed* to heal up. Except along this track, the wound has united by first intention and the gut sutures have been absorbed. There are no ligatures to come away, because the gut ligatures which were used have also been absorbed. I find here a small spot of dead cellular tissue at the upper part of the wound, which was probably devitalized by the injury. The dressings will be applied as at first, and I have brought him before you in order that you may see the details of the method. The great object in view is to secure cleanliness, and all the dressings must be scrupulously clean; the antiseptic agent is only a help in this direction, the real essential condition being cleanliness, This is proved by abdominal operations where we are obliged to do without the bichloride and rely upon recently boiled, sterilized water and accomplish the object in this way. The bichloride, however, is a very efficient antiseptic; should any germs happen to get into the dressings they could not live in such an atmosphere.

Before touching the dressings or the patient I carefully scrub my hands with soap and hot water and follow this by ether and the bichloride solution ($\frac{1}{5000}$). All instruments and utensils have been sterilized by boiling water. The stump is also rendered aseptic by douching and scrubbing with bichloride solution and washing with ether. Over the line of the incision is placed some varnished silk protective in order to facilitate escape of the discharge if there should be any. This is placed directly along the wound, and then the surface is well dusted with iodoform. I do not think that iodoform is an antiseptic, but it favors healing and keeps the wound clean. Except for the expense, I would prefer aristol for this purpose, on account of its freedom from the peculiar odor which is the great objection to iodoform. Upon the well dusted surface, we place a compress of ordinary gauze wet with a solution of bichloride ($\frac{1}{2000}$), several thicknesses being used. The dressings are then confined by a roller bandage, also of gauze wet with the same solution. A layer of cotton batting, or dry absorbent cotton, is now used to envelope the stump, and a roller bandage applied to keep everything in place. These dressings need not be disturbed for a fortnight. This is precisely the same mode of dressing wounds which I used years ago, and which, I find, fully accomplishes the purpose of keeping germs out of the wound and preventing infection and suppuration. I have used it in all amputations, even of the thigh, resections, and other operations, and even these large wounds heal by first intention. It is wonderful that such serious injuries should be followed by so little disturbance of the system and so few symptoms. In this lad, for instance, the brachial plexus was exposed in the wound and the median nerve lacerated and pulled out. I can only attribute the favorable course of the case, to the prompt performance of amputation and the prevention of fermentation in the wound by the use of antiseptic dressings.

I will now show you a different kind of a case in which an operation will be done for removal of a tumor of the breast. While the patient is being etherized, I will read you her history:

"Jane T., a widow, 68 years of age, a seamstress by occupation, was admitted yesterday, Sept. 30. She states that four years ago having previously enjoyed good health, she fell and struck her right arm, causing dislocation of the shoulder. Shortly afterwards she noticed the presence of some lumps in her right breast. In June, 1889, she was admitted into the hospital and the breast was found to be cancerous and was removed by my colleague, Dr. Hunt. She made a good recovery; but about a year ago she observed a growth in the cicatrix, which slowly increased until it attained its present size, which is that of a good sized orange. It is purple in color, hard, has many vessels visible upon the surface, and has begun to ulcerate. It causes constant pain which at times is sharp and lancinating. Her general health has declined, she is quite thin and her appetite is poor. Her urine has been examined and found free from sugar or albumen." Here is a fungoid growth following an amputation of the breast and is undoubtedly malignant. When we take into consideration the age, sex, and history of the patient, and the locality of the growth, there can be no doubt as to the diagnosis being correct. The mammary gland in the female is a favorite site for carcinoma, and this is especially likely to occur where the breast has been previously affected by inflammation, or "gathered breast," during lactation, in earlier life.

In operating, the field is cleaned as in the preceding case, with soap and water, ether, and bichloride solution, the axilla having been shaved just before beginning operations. The growth is then removed by being included between two curving incisions. It is better in these cases to tear out the growth, cutting as little as possible, so as to thoroughly remove it. All hard spots in the adjacent muscles or cellular tissue are also removed, and all suspiciously hard lymphatic glands found in the neighborhood. Bleeding vessels are at once seized with the hæmostatic forceps and subsequently secured by applying catgut ligatures. I have the surface frequently irrigated by the weak bichloride solution ($\frac{1}{1000}$) during the operation. Having found that the old cicatrix is hard, I will also remove that. We have now a large gaping wound over which the skin can be brought as in a plastic operation. As the wound is superficial, a drainage tube will not be required. Catgut, interrupted, double-knotted sutures are employed, the protective is placed over the incision, iodoform dusted on freely, including the arm pit, and the gauze compress bandage, cotton and retaining roller used as on the previous case. The arm was directed to be kept to the side, to prevent traction upon the sutures, and an anodyne directed to be administered.

The modern treatment of tumors of this kind is repeated operation. There are cases, in which there has been a recurrence after extirpation twelve or thirteen times, and life has been prolonged many years. Such growths should be excised as early as possible, and the operation repeated as often as it returns. I would operate in this case, even if I knew that her liver had been invaded by secondary growths, for the reason that this tumor is beginning to ulcerate, and in the course of a few weeks, the entire surface would be converted into a foul ulcer, having such a decided odor as to make her associates very uncomfortable, so that her existence would be almost unbearable; while her strength would be undermined by the discharges, and possibly by hæmorrhages from this foul, fungous growth. This operation will cover the surface with skin and get rid of this mass of malignant growth.

While the rule is to operate, I must acknowledge that it is also the rule that the growth will sooner or later return. In my own experience of nearly thirty years in this hospital, the longest period of exemption after operation which I have seen was eleven years. In a letter which I received from Professor Agnew a short time before his death, he informed me that seven years was the longest period any of his patients had survived amputation of the breast for mammary carcinoma.

How to Sterilize Milk.—We have recently been conducting experiments upon this subject, with results so satisfactory that we are glad to be able to communicate them to our readers. The first experiments were made with a tin receptacle capable of resisting a pressure of 25 lbs. This was partly filled with water and placed in boiling water, to the action of which it was exposed for half an hour. The pressure indicator showed no very considerable increase in pressure within the closed receptacle. We then tried boiling the tin vessel in a saturated solution of salt in water, when the pressure, as indicated by the pressure gauge, rose to 4 lbs. This was the result which we expected. We accordingly proceeded to a further experiment, which consisted in boiling milk tightly sealed in strong bottles in a saturated solution of salt. Milk sterilized in this way, by boiling in the salt solution for half an hour, will keep perfectly for an indefinite length of time. We opened, a few days ago, a bottle of milk which had been thus sterilized last June (1891), and found it to be as fresh as when placed in the bottle. It is only necessary to take the precaution to allow the solution of salt in which the bottles are boiled to cool before removing the bottles. If the bottles are removed from the solution while hot, they will almost instantly burst. The vessel containing the bottles of boiling milk should be set aside and allowed to cool gradually, when the bottles should be removed and placed in an ice chest or an ordinary refrigerator. Ordinary soda-water bottles are excellent for the purpose; or beer bottles may be used. Ordinary corks may be used for the purpose, but they should be previously boiled for half an hour. They should be pressed in tightly, and fastened with wire or with a patent fastener. After the bottles have been cooled and removed from the boiling kettle, the tops should be carefully dried and, if corks are used, covered with sealing wax, such as is ordinarily used for canning purposes.

The efficiency of the salt solution is due to the fact that its boiling point is 227° F., while that of boiling milk is less than 200° F. By using different salts, a still higher temperature may be attained. For example, a saturated solution of carbonate of potash, or saleratus, boils at a temperature of 275 F., while a saturated solution of chloride of calcium boils at 355° F. These high temperatures are, however, unnecessary.—*Bacteriological World*.

On Peripheral Nephritis in Typhoid Fever.—Dr. Judson S. Bury arrives at the following conclusions from a consideration of such facts as have been recorded, and from a study of two cases which have come under his own observation: "In one set of cases we may suppose that the action on the nerves is too slight to give rise to outward manifestations, or that these are masked by the general symptoms of the fever. In another set of cases the toxic influence on the nerves appears to be revealed by a series of irritative phenomena, such as neuralgic pains, cutaneous and muscular hyperæsthesias, exaggerated reflexes, and cramps and contractures of various muscles; while, in a third group of cases, the presence of an atrophic paralysis, its distribution, progress, and associations, leave little doubt on the mind of an observer that he has to deal with a genuine parenchymatous neuritis, and frequently with one of wide distribution throughout the body."—*The Medical Chronicle*.

Glycerine in Hepatic Colic.—Dr. Ferrard concludes a communication to the French Academy as follows: 1. Glycerine administered by the stomach is absorbed in its natural state by the lymphatics, especially by the vessels which lead from the stomach to the hilum of the liver, and to the gall-bladder; it is even found in the suprahepatic veins. 2. It is a powerful cholagogue, and an excellent remedy for hepatic colic. 3. In relatively large dose (20 to 30 grammes), glycerine brings an end to the attack. 4. In small doses (5 to 15 grammes), taken each day in a little alkaline water, it prevents new attacks. 5. Glycerine, without being a lithotriptic, is nevertheless a valuable agent in biliary lithiasis.—*Journal de Médicine. de Paris*.

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SATURDAY, NOVEMBER 5, 1892.

THE ELECTION.

Within a few days every American citizen will be called upon to exercise his privilege of franchise in voting for the chief executive and legislative officers of the Nation. After the experience of the past two years in vain efforts made to induce Congress to enact a law creating a Cabinet Officer of Public Health, with the subsequent history of conflict between National and local health authorities, the medical profession should be exceedingly careful in finding out the views of congressional candidates on these subjects, which are as vital to the welfare and prosperity of our country as that of the tariff or free trade.

In the States where governors and legislatures are to be elected, similar knowledge of the attitude of candidates should be found out and made known. Instances are not wanting where the governor of a State has to some extent brought disrepute upon our profession by the appointment of unsuitable persons as members of the State Board of Health, with the operation of which the whole medical profession is most intimately affected, and again in the appointment of a professional fledgling as Surgeon-General of the State National Guard.

Knowing as we do, that there is no interest paramount to that of the physical welfare of the people, and of physicians to that which most intimately concerns themselves and families, it behooves us to act together as one man when we go to the polls next Tuesday, and there vote only for the men who give us a reasonable assurance that they will treat our professional interests with the respect which is their due, and favor by their acts such legislation and appointments as may be shown to be necessary and in accord with the enlightenment and learning of our art and science. This is not written in the special interest of the candidates of any political party, but for the purpose of arousing physicians to a sense of their political duty to themselves. Our professional interests are as important to us as the affairs of the manufacturer and merchant to those engaged in such occupations. We can make ourselves heard at the polls. That is our ultimatum. Let us turn our faces steadily in that direction, act together according to the lines above indicated, and it won't be very long until we will be inquired of as to what we want. One effort for one day in holding tickets at the voting precincts will not be thought of as undignified or a violation of professional integrity, when we remember that such an act was done with a right motive,—a securing of the elevation and protection of the medical profession.

MEDICAL TEACHERS AND TEACHING.

The effort to raise the standard of preparation for medical study, and lengthen the course meets the hearty approval of all. But is there not needed some changes among teachers and methods of teaching? Are the medical colleges doing their work along the advanced lines of medical progress? The evils that are so apparent in the short hurried studies of young men both unprepared and unfitted for professional life are not unfrequently traceable to the teachers and their methods.

Somewhere in the past an eminent teacher was invited to read a paper before a Section of the Association at its annual meeting. He declined with thanks, giving as a reason that there was really nothing new in that field worth writing about. This is a good illustration of many surgeons, who honestly think the entire field of medicine has been explored: To them there are no frontiers of mystery, everything is clear and arranged into distinct sections, which are always the same, with but slight variations. Such teachers are literally index men, who spend their time in arranging and grouping symptoms, and who teach medicine as a great structure, with great foundations, built up in systematic layers, of etiology, symptomology, pathology and treatment. They teach that the arrangement of the facts of disease, its diagnosis, symptoms and remedies, are the only definite entities of medicine. The knowledge of which is largely one of memory, and the practice of which is that of collecting and arranging them in groups, so as to be reached practically with drugs. Until recently the examination papers of graduates brought out this observation, that proficiency was simply a matter of memory, that teachers had simply been mapping diseases and their remedies as definite facts, that never varied. The student started out with the assurance that symptoms, terminations and remedies were always the same, and as a result they failed, or became mere commercial men, who made money the main object of life.

Text-book teachers always narrow and limit the range of science: They teach as ultimate and absolute truths that which is often contradicted by experience. While it is necessary to teach a certain definite grouping of facts with a certain possible meaning, it is dangerous to give the impression that these are absolute truths. Many of the incompetents who come from colleges are crippled by this false method. They go out to practice trusting to their memory of the lectures, and supplemented by text books. They are astonished and confused at the wide variations between teachings and practice. The result is that few ever become original thinkers or investigators. The teacher is responsible. Medicine has been taught as a mass of facts simply; no inspiration, no enthusiasm to go beyond the externals, and understand the relations of the almost endless links in the drain of life; the entire time has been spent in analyzing each separate link and reducing it to a mathematical formula; everything is defined and explained, and the very spirit of medcine is crushed out. Such teachers are everywhere, in all colleges, literary and scientific. Dogmatic formulists, who always talk about "grand principles," and never go beyond definition and exact description.

Medical schools must teach something more than exact formulas and explanations. The student must be taught to study and investigate for himself, beyond all lectures and text books. He must be taught that these are only guides and aids, and that the real facts are often far beyond these levels. The prize winner and the class scholar who has answered all the questions may be a mere parrot, who after a time becomes a teacher, and narrows the range of science to his dead level of index classification. Such men are blind leaders of the blind, and the unfortunate student who passes through such hands is dwarfed and crippled as a scientific man, or loses half a life time in unlearning and correcting the errors of his medical instruction. This may seem extravagant, but a casual observation, among the incompetent men of the profession, will indicate its truth. How few men are original thinkers and students? How many men trust to the teachings of a text-book and their memory of college lectures? How many men are hunting for specifics and combinations of drugs to do this or that? How many articles in journals are devoted to explanations of symptoms and diseases? How many works arrange and group the supposed facts of medicine as if they were mathematical truths? These and many more queries suggest that raising the standard of preparation for medical study will not of itself bring into the profession better medical men.

We must have medical teachers who are scientific students and explorers, who teach the spirit of truth as well as the letter. Teachers who can inspire the student with something more than a text-book conception of the relation of facts. Then we shall have men in the profession who are always students, always investigating on the road from the lower to the higher. There are such teachers and colleges, but we sadly need more of them.

ANENT this subject, medical teachers and teachings, we observe that the question of a higher standard of medical education is proposed for the consideration of a convention of the two-term-no-requirement Southern Medical Colleges, called to meet at Louisville on the 16th of November, prox., a subject that has already been settled by the Association of American Medical Colleges.

In his public address PROF. WM. T. BRIGGS, President of the American Medical Association, demanded at Washington, D. C., in May, 1891, the exclusion from membership in that body of all the faculties of the two-term-no-requirement schools; and proposed a united stand in favor of the minimum standard of requirements of the College Association.

The convention called to meet in Louisville is expected to extricate the schools that are now operating upon the two-term plan from the dilemma into which their defiance of the resolution of the American Medical Association and the requirements of the College Association have placed them.

Instead of living up to the standard unanimously adopted by the National Convention of Medical Teachers assembled at Nashville, Tenn., May, 1890, the two-term schools hope to bridge over the present session on the promise of coming into the three-course graded system next year. They are now ready to admit they are not able to fulfill their promises to the student this year, but promise to reform next year.

Unless we greatly mistake in our reading of the signs of the times, the dawn of the day is not far hence when there will be a complete uniformity of prelimary requirements, length and number of terms of study, for the student in all American Medical Colleges, and that there will be a similar uniformity of requirement to enable a physician to practice his profession in all of the United States.

The accomplishment of these aims and ends is a fruition of the supreme purposes of the American Medical Association.

THE Preliminary Announcement of the First Pan-American Medical Congress is fresh from the office of the Secretary-General. It is imposing in size and appearance, and contains a vast amount of information pertaining to the meeting of the Congress.

The importance of this general meeting of physicians representing all countries of the Western Hemisphere cannot be overestimated. The intelligent and well directed labor of the officers of the Congress as indicated in this announcement gives an assurance of pronounced success. In order to accomplish the effective work already done by the officers of the Congress, it has been necessary to expend a very considerable sum of money for clerk hire, stationary and postage. This expense account has been met by voluntary advance registrations of those who expect to attend the sessions of the Congress. It is very much desired that every one who expects to become a member of the Congress will transmit the registration fee of $10 to Dr. A. M. Owen, Evansville, Ind.

American Public Health Association.—The twentieth annual meeting, that will convene in the City of Mexico, Old Mexico, November 29, 30, December 1 and 2 inclusive, promises to be one of the most interesting that has been held since the Nashville meeting of several years ago.

Dr. Liston H. Montgomery, of Chicago, has made arrangements with several of the railroads that lead from Chicago to Mexico—which he considers the banner route to be selected, and the topography of the country traversed and favorable auspices offered is certainly an opportunity that has seldom been afforded to any other organization.

The itinerary of route to be traversed is as follows, in special Pullman sleeping and buffet cars, without change during the entire going and returning journey: Going, leave Chicago via the Chicago and Alton R. at 11 A.M. Saturday, November 19. Arrive at St. Louis in time to leave that city at 8:10 P.M. of same day, via the St. Louis, Iron Mountain and Southern R. R., stopping over Sabbath at Hot Springs, Ark., thence Monday A.M. November 21, to Texarcana. Thence via the Texas Pacific R. R. to Longview, Tex.; thence over the International and Great Northern R. R. to San Antonio. Southern Pacific R. R. to Eagle Pass. Mexican International R. R. to Torreon, Mexico; Mexican Central R. R. to City of Mexico. From El Paso there is a choice of any one of the following three routes to return by, namely: Texas Pacific R. R. to Dallas, thence over the Missouri, Kansas and Texas R. R. to Hannial, Mo., and Chicago, Burlington and Quincy R. R. to Chicago; or Texas Pacific R. R. via New Orleans and Illinois Central R. R. to Chicago; or return as the going trip, via the Iron Mountain and Chicago and Alton railroads to Chicago.

Luxuriant appointments and perfect convenience is assured. The railroad fare is one-half rate for the lowest limited fare one way, tickets valid until December 31, or return earlier if desired. For further particulars, address Dr. Montgomery, 70 State St., Chicago, John E. Ennis, District Passenger Agent, Iron Mountain route, 199 South Clark St., Chicago, E. D. Spencer, Northern Passenger Agent Missouri, Kansas and Texas R. R., Room 12, Rookery Bld'g, Chicago.

In view of the public interest at the present time centering in epidemics, it is hoped a large number will avail themselves of this splendid and rare opportunity and exceeding low railroad fare and the commutated rate in sleeping car accommodations of attending this meeting.

DOMESTIC CORRESPONDENCE.

To the Editor of the Journal of the American Medical Association:

Dear Sir:—In your issue of The Journal of October 29, 1892, p. 510, you have published an article entitled "Observation of a Case of Purulent Otitis Media, Cerebellar Abscess, and Death in Three Weeks," as "read in the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held at Detroit, June, 1892, by C. H. Burnett, M.D., of Philadelphia, Pa." Permit me to state that I read no paper with this title at the time and place stated above, but I did read one entitled "Observation of a Case of Acute Purulent Otitis Media, Cerebellar Abscess, and Death in Three Weeks," which has been published in full in the *International Medical Magazine*, Sept., 1892.

That which follows the incorrect title of a paper erroneously ascribed to me, in your issue of Oct. 29, 1892, is composed first, of *remarks* made by me in the discussion of Dr. Knapp's paper and others of a similar nature, and, secondly, that part in heavier type, of remarks made by me in closing the discussion on a paper I presented at the above mentioned meeting of the Section, entitled "Some Observations upon Excision of the Membrana Tympani and the two Largest Auditory Ossicles," which paper has already appeared in full in the Journal of the American Medical Association for Oct. 22, 1892.

Had I been allowed to see a proof of this article incorrectly ascribed to me, before it went to press, this mortifying error would not have occurred. Doubtless it has been due to a reportorial blunder. By publishing this note at the earliest moment you will aid materially in setting me in a true light before the readers of your valuable Journal and also greatly oblige, yours sincerely,

C. H. Burnett, M.D.

[The matter referred to by Dr. Burnett was published just as prepared for The Journal by the officers of the Section.—Ed.]

SELECTIONS.

Chemistry of Digestion.—Dr. A. L. Gillespie points out that, though hydrochloric acid is a powerful antiseptic and capable, in dilutions of 1 to 2 per cent., of inhibiting or destroying most minute organisms, the addition of proteid matter to it, and formation of what he terms proteid-hydrochlorides in the process of digestion, allows the same organisms to flourish luxuriantly, though the strength in acidity be maintained. After a meal consisting largely of proteids, generally an hour elapses before the advent of free hydrochloric acid, and the gastric juice is therefore much less antiseptic than after a meal of carbohydrate material. It is suggested accordingly that, since a typhoid or other pathogenic bacillus ingested during a heavy dinner has a more favorable opportunity for development than if it were taken with such food as porridge, it would be well, if there were any danger of poisoning by disease germs, to take nothing with a proteid meal except it had been thoroughly cooked, or, as alternatives, to live chiefly on carbohydrates, or to take some dilute hydrochloric acid after each meal.—*Medical Magazine.*

The Period of Invasion of the Prostatic Urethra in Cases of Acute Gonorrhœa.—Heisoler, in the *Perter Medicinische Chirgurgie Presse*, 1891, reports the results of his investigation of fifty cases of gonorrhœa. He finds that in twenty per cent. the prostatic urethra becomes affected in the course of the first week; in thirty-four in the course of the second week; in fourteen per cent. in the course of the third week; in twenty per cent. in the fourth week; in four per cent. in the sixth and seventh week, and in two per cent. in the second and third months. According to the author the constitutional condition does not play any rôle in the etiology of posterior urethritis.—*Univ. Med. Magazine.*

A New Local Anæsthetic.—It is reported in the Institute of Medicine in Mexico an alkaloid producing local anæsthesia has been discovered in the plant commonly known as "blood weeper."

BOOK REVIEWS.

ADDRESSES AND ESSAYS. By G. FRANK LYDSTON, M.D. Second Edition. Renz and Henry, Louisville, Ky.

In this neat and attractive little volume Dr. Lydston has gathered together some of his late contributions. We had occasion some months ago to review the first edition of these essays, and this, the second edition, comes to us increased by the addition of several late monographs.

The following are the subjects dealt with: Evolution of the local venereal disease, gonorrhœa in women, hypertrophy and hyperplasia consequent upon lesions of the genitalia, aberrant sexual differentiation, a plea for early operation in acute peritonitis, studies of criminal crania, materialism *vs.* sentiment in the study of crime, the *rationale* of extension of the spine, tropho-neurosis in the phenomena of syphilis, varicocele, observation on stricture of the urethra, the treatment of syphilis, sexual perversion, urethral and genital neuroses, a case of circinate papulo-erythematous syphilide with psoriasis palmaris syphilitica.

Where there is so much that is good it would seem invidious to single out special topics for particular mention. We cannot, however, let the occasion pass without calling special attention to the chapters on hypertrophy and hyperplasia consequent upon lesions of the genitalia, and tropho-neurosis in the phenomena of syphilis. These two monographs form an able and philosophical discussion of these subjects that will be sought elsewhere in vain. Dr. Lydston clearly differentiates the true syphilitic lesion from the more or less variable phenomena that follow syphilis, and which are similar in many respects to pathological conditions entirely disconnected with that disease. He also clearly points out that it is not the mere association of syphilis and some disease that places the former in an etiological relation with the latter, but that the syphilization acts as a predisposing factor, by lessening the resistance of tissues. In this is furnished an explanation of the uselessness of antisyphilitic treatment in so many cases in which syphilis is thought to be an etiological factor. In these cases the lesion has ceased to be syphilitic, and remedies that ordinarily control those conditions are no longer effectual.

The articles on the study of crime, sexual perversion and criminal crania, show a wide grasp of these difficult subjects. The classification of sexual perversion proposed by Dr. Lydston has been extensively adopted by American alienists.

The volume as a whole displays marked originality of thought, clearly and logically expressed. We can recommend the "Essays" not only to the studious and thoughtful physician, but also to the active practitioner engaged in his daily battle with disease.

MISCELLANY.

THE CHICAGO GYNECOLOGICAL SOCIETY held its fourteenth annual meeting at the Grand Pacific Hotel, Friday evening, October 28, 1892. After the banquet the topic for discussion was: "How Best May we Further the Interests, Scientific and Social, of the Society, During the World's Fair Year?" Officers for the ensuing year were elected as follows: President, Dr. E. J. Doering; First Vice-President, Dr. F. Henrotin; Second Vice-President, Dr. Franklin H. Martin; Secretary, Dr. Henry Parker Newman; Treasurer. Dr. A. H. Foster; Editor, Dr. W. S. Christopher.

ON the 27th of October the Hospital College of Medicine, Medical Department of the Central University of Kentucky, abolished the clinical lectureship on the eye, ear and throat, heretofore occupied by S. G. Dabney, M.D., Professor of Physiology.

MEETING OF THE INTERNATIONAL MEDICAL CONGRESS (AMERICAN PUBLIC HEALTH ASSOCIATION) in the city of Mexico, Nov. 29th., 30th., and Dec. 1st. and 2nd., 1892., the elegant special Pullman Car to convey the delegates and their families from Chicago to the city of Mexico and return, will leave Chicago Nov. 19th., 11 A.M. The car is rapidly filling up. Among the number who have engaged space are: Dr. C. M. Hewett, wife and daughter, Red Wing, Minn.; Prof. DeLaskie Miller, Chicago; Prof. R. C. Kedzie, Michigan; W. A. Morrison, St. Louis; Dr. E. S. Cook, Mendota, Ill.; Dr. C. C. Hunt, Dixon, Ill.; Mrs. L. Miller, Cincinnati: Receptions will be given the party at Hot Springs, Ark. San Antonio, Tex. and other points. Meals will be served on the special car at net cost. No such arrangements for a luxurious trip at so slight an expense have ever been offered. Applications for space in this car should be made at the earliest moment possible. For further information, maps, time-tables, etc., address, John E. Ennis, D. P. A., Mo. Pac. Ry., No. 199 Clark St., Chicago, Ill.

WANTED.—Will pay 10 cents per copy for the following numbers of THE JOURNAL: Vol. 2, No. 4, Jan. 26; No. 19, May 2, 1884. Vol. 5, No. 2, July 11; No. 3, July 18, 1885. Vol. 6, No. 6, Feb. 6, 1886. Vol. 15, No. 1, July 5; No. 4, July 26; No. 5, Aug. 2; No. 11, Sept. 13; No. 13, Sept. 27, 1890. Vol. 16, No. 1, Jan. 10; No. 2, Jan. 17; No. 3, Jan. 24, 1891. Vol. 17, No. 3, July 18, 1891.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from October 22, 1892, to October 28, 1892.

Capt. Freeman V. Walker, Asst. Surgeon U. S. A., granted leave of absence for one month, to take effect on arrival of First Lieut. George D. De Shon, Asst. Surgeon U. S. A., at Ft. D. A. Russell, Wyo.

First Lieut. George D. De Shon, Asst. Surgeon U. S. A., is relieved from duty at Columbus Bks., Ohio, and will report in person to the commanding officer, Ft. D. A. Russell, Wyo.

Capt. Eugene L. Swift, Asst. Surgeon, so much of S. O. 230 as relates to change of station, is suspended until further orders, and he is granted leave of absence for one month, on account of sickness, with permission to apply for an extension of one month.

Major John C. J. Happersett, Surgeon U. S. A., is relieved from duty at Ft. Custer, Mont., and will report in person to the commanding officer, Ft. Keogh, Mont., for duty at that post, relieving Major Philip F. Harvey, Surgeon. Major Harvey, on being relieved from duty by Major Happersett, will repair to West Point, N. Y., and report in person to the Superintendent of the U. S. Military Academy, for duty at that post, relieving Major Henry McElderry, Surgeon. Major McElderry, on being relieved by Major Harvey, will repair to Omaha, Neb., and report in person to the commanding General, Dept. Platte, for duty as attending surgeon and examiner of recruits at Omaha.

First Lieut. Allen M. Smith, Asst. Surgeon U. S. A., is relieved from further duty at Ft. Assiniboine, Mont, and assigned to duty at Ft. Custer, Mont., where he has already been ordered to temporary duty.

Capt. Edward R. Morris, Asst. Surgeon U. S. A., is relieved from duty at Ft. Custer, Mont., and will report in person for duty to the commanding officer, Ft. Warren, Mass., relieving Capt. Peter R. Egan, Asst. Surgeon U. S. A. Capt. Egan, on being relieved by Capt. Morris, will report in person to the commanding officer, Ft. Custer, Mont., for duty at that post.

First Lieut. William E. Purviance, Asst. Surgeon U. S. A., is relieved from duty at Jefferson Bks., Mo., and will report in person to the commanding officer, Ft. Sherman, Idaho, for duty at that post, relieving Capt. William W. Gray, Asst. Surgeon. Capt. Gray, on being relieved by Lieut. Purviance, will report in person to the commanding officer, Ft. Schuyler, N. Y., for duty at that post.

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ORIGINAL ARTICLES.

CATARRAL SORE THROAT IN THE LAKE REGION.

Read before the Section of Laryngology and Otology, at the forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY J. M. G. CARTER, M.A., M.D., Sc.D, Ph.D.,
WAUKEGAN, ILL.
PROF. OF PATHOLOGY IN THE COLLEGE OF PHYSICIANS AND SURGEONS OF CHICAGO, FELLOW OF THE AMERICAN ACADEMY OF MEDICINE, ETC., ETC.

I wish to premise that the discussion of our subject in this paper is from the point of view of a general practitioner, not that of a specialist.

I shall use the term catarrhal sore throat, in this connection, to indicate that class of diseases, whether of the tonsils, pharynx or the larynx, where there is actually present or where there exists a strong tendency to a catarrhal inflammation of all these organs. In order to limit my meaning more definitely, I will refer briefly to the fact that all inflammations of the throat, of whatever form, may be classified as catarrhal, croupous and diphtheritic. A catarrhal inflammation, whether mucous, serous or purulent, is accompanied by an exudate which has no tendency to coagulate. A croupous inflammation is accompanied by an exudate which contains a greater amount of albumin and fibrin than the catarrhal variety, and consequently does tend to coagulate and form what is termed a false membrane. A diphtheritic inflammation causes the epithelial cells (which only suffer desquamation in the other two forms) to die on the spot, the exudate coagulates, and the deeper tissues are involved in the destructive process. It is evident that the croupous and diphtheritic forms may be introduced by the catarrhal form. The variety of which I speak now, however, is a catarrhal inflammation which usually terminates in three to five days, without croupous or diphtheritic inflammation supervening to any marked degree.

In the last nine years, during which I have resided on the shore of Lake Michigan, I have observed several thousand cases of throat disease in various forms. The form which has constituted by far the greater number of cases has been catarrhal, reaching in number more than two thousand, sometimes tonsillitis, sometimes laryngitis, and sometimes pharyngitis, but in the majority of instances the entire throat was involved.

I have noticed, particularly in relation to the catarrhal forms, that changes in the weather were followed by an increased or decreased number of cases, according to the elemental conditions of the change. Among these were variations of ozone, temperature, humidity, and direction and force of the wind. We are told by Sir E. Solly[1] that the proper proportion of ozone in the atmosphere is about 1 to 700,000. This would not disturb the most sensitive mucous membrane, but when this ratio is perceptibly increased, ozone acts as an irritant. M. Girerd[2] of Panama informs us that ozone transforms albumin into fibrin, and hæmoglobin into oxyhæmoglobin. The continued and prolonged action of ozone on the fibrin thus produced, reduces it to a natural state, and renders it incoagulable.

If other conditions are likewise unfavorable, catarrhal diseases of the throat and respiratory tract occur more frequently in damp weather, particularly if accompanied with cold. In such weather there is an increase of CO_2, and an excess of electricity. A venous distension occurs in damp weather (Weber), which produces a passive hyperæmia of the mucous membrane, and disposes to catarrh. Dr. Weber further states that dry air also irritates mucous membranes, disposing to catarrhal affections. The dry air takes moisture from the mucous membrane of the respiratory passages by evaporation. The body loses moisture in such an atmosphere, the circulation is increased, the mucous membranes become hyperæmic and more easily excited by irritants. And it is under conditions of dry air and the like after storms that ozone occurs in excess, and acts as an irritant.

It is known to scientists, as related by Reclus,[3] that the air of America is moister than that of the Old World in general, and this increased moisture results from the fact that the American Continent is narrower and more largely influenced by sea breezes. This will help to explain the frequent occurrence of catarrhal epidemics of various kinds in our country—catarrhal diseases of the respiratory tract in the northern portions, and of the alimentary tract in southern regions. From this it appears that cold air with moisture tends to produce catarrhal diseases of the respiratory tract, while warm air with moisture disposes to catarrh of the alimentary tract. The most agreeable humidity for breathing is 70 to 80 per cent., the diminished evaporation from the lungs causing the air to be less irritating to the respiratory mucous membrane.

We are informed by Parkes[4] that there is a tendency to catarrh over soils which contain ground-water, and where springs are abundant. Wagner[5] states that strong winds, especially from the east and north-east, cause catarrh to grow worse, and of course must act as a cause of acute attacks.

Dr. N. S. Davis,[6] of Chicago, gives the opinion, as a result of his experience and observation, that high winds, either northeast, northwest, or west, are to be considered factors in the production of catarrhal affections of the respiratory tract, but that these winds bear some relation to mountain elevation or ocean currents. He further gives some interesting and valuable statistics from a laborious work of Daniel Drake[28] compiled from army records. It is stated there that the number of cases of catarrhal diseases of the respiratory passages occurring at Fort Snelling, near St. Paul, Minn., was 600 in 1000 soldiers, and at Fort Dearborn, Chicago, was 102 in 1000 soldiers. Other posts are included in his report, and from these Dr. Davis is led to the conclusion that the important factors in the production of this class of diseases are cold, variableness, moisture and high winds. After reviewing a large area and many causes, Dr. Drake gives the ratio of cases occurring at different times in the year as 119.8 in the first quarter, 72.7 in the second, 48.7 in the third, and 99.6 in the fourth. He further makes the statement that the number of cases decreases in the ratio of 31.5 for each degree of latitude, going south.

In a paper [7] read before the Chicago Medical Society, Nov. 16, 1885, I stated that in the epidemics of tonsillitis which had occurred in Waukegan, Ill., I had observed an excess of ozone in the atmosphere, and east or northeast winds preceding and accompanying the outbreaks. The Michigan State Board of Health and others (Earle [8]), have since made similar observations.

It would be a matter of great interest to know the influence of this climate upon the aborigines, in the causation of catarrhal troubles, but so far as I am aware, *the investigations in this direction* are not sufficiently extensive to enable us to form a very satisfactory opinion in the matter.

We are informed by Cohen[9] that the North American Indians are subject to such catarrhal affections as afflict the white population, and that they ward off catarrh and acute sore throats by sleeping enveloped in blankets, and breathing through the partially closed fist. Another authority [10] states that bowel troubles are the most frequent form of disease among the Indians. The probability is that the same etiological factors are at work among aboriginal races as are found to produce pathological conditions among acclimated peoples; namely, that cold and damp climates tend to produce catarrhal affections of the respiratory passages, while warm and moist climates dispose to like disease of the alimentary canal.

During the year ending March 31, 1892, I treated 389 cases of catarrhal sore throat, not including the patients treated in my office practice. These cases occurred as follows: April, 38 cases; May, 23; June, 10; July, 13; August, 20; September, 15; October, 20; November, 26, December, 44. January, 73; February, 66, March, 41. The ratio here, when compared with that mentioned in Dr. Drake's report, given above, will indicate that the same etiological factors have operated in the causation of these catarrhal affections, the difference being due to the fact that his report refers to an extensive area of territory, while mine is confined to an area of not exceeding 120 square miles. He gives the ratios, first quarter, 119.8; second quarter, 72.7; third quarter, 48.7; fourth quarter, 99.6. In my cases the ratio was: first quarter, 120; second, 47.3; third, 32; fourth, 60. During the winter half of the year, that is, from November 1 to May 1, I had 288 cases, while in the warm or summer half, that is, from May 1 to November 1, I had 101 cases. I think that the excess of my ratio above his in the first quarter, *i. e.*, January, February and March, is due largely to the presence of the lake, and perhaps also to the ground water under Waukegan, indicated by the numerous springs found there. The average temperature in January, from 1871 to 1880, at St. Paul, Minn., was 15° F.; that at Waukegan, Ill., was 25°, a difference of 10°. This may be considered an average climatic difference. Now an atmosphere at 25°, other things being equal, will contain more moisture than one at 15°, and a cold moist air has a greater tendency to produce catarrhal affections of the respiratory organs than a cold dry air. The average per cent. of humidity at these two places is about the same. The presence of the lake keeps the air at Waukegan, especially when the wind is N.E., E. or S.E., heavily loaded with moisture, so that the humidity is higher, and as the wind during the three months named is cold, the excess of cases of catarrhal throat disease in Waukegan, above the ratio given in the large area included in Dr. Drake's investigations, is readily understood. This excess does not occur when compared with St. Paul alone. Hence I reiterate my opinion that the relations of temperature, humidity, winds, ozone, and very likely electricity, are very important, if not the chief, factors in the production of catarrhal diseases of the respiratory passages.

Another fact which I have observed in these cases, as well as in cases apparently due to la grippe, is that they are more frequent after cyclonic disturbances. This has also been observed by others. The same statement may be made with regard to true croup and diphtheria.

The course which some of these cases take, their infectious nature and the swelling of the cervical glands, and the submucous infiltrations (Baginsky[14]) that also frequently occur, lead us to believe that many of them are of bacterial origin. In all probability it will be found in these cases, as Dr. Pfeiffer[11] and others have found in the influenza of la grippe, that there is a bacillus in the blood and sputum. It is very likely that the climatic elements enumerated above so impress the respiratory mucous membrane *as to furnish a suitable soil for the cultivation* and growth of the particular form of bacillus or coccus *which causes the disease. As it is known that the* mouth is a focus for bacteria and micrococci (W. B. Miller[13]), it may be the more easily believed that some of these sustain an etiological relation to catarrhal sore throats. Indeed, various authors (Dubousquet–Labordere[15]) of late have maintained the contagiousness of tonsillitis, as well as other catarrhal diseases. Gulland[16] affirms that a function of the tonsils is the reproduction of leucocytes. In catarrhal disease this function is interfered with, and hypertrophy results, but in debilitated patients the arrest of this function may cause bacteria to enter the tonsils. I believe, however, with Allen,[20] that the natural condition of enlargement of the tonsils which occurs in children and youth is often mistaken for hypertrophy from disease.

It is interesting to note, in this connection, that horses are affected, in epidemics of catarrhal diseases of the respiratory passages, a few weeks before members of the human family are attacked (Fleming[20]).

It is a matter of common observation that some persons are more susceptible to catarrhal diseases than others; that is, the power of resistance to disease, which every one has to a certain extent, is so strong in some individuals that they will pass through an epidemic unharmed, while the more susceptible are first affected. Those who are susceptible to catarrhal sore throats are liable to have recurrent laryngitis, pharyngitis and tonsillitis, until a chronic form may result. The increased number of capillaries in the cuboid space posterior to the nares (Flint[17]) renders that region a favorite retreat for chronic catarrh.

The habit of wearing mufflers about the neck is liable to make the throat more sensitive, by being usually kept in a state of perspiration, which permits a refrigeration of the skin to occur more easily, and the reflux of blood to the dense network of capillaries in the larynx (Landois[18]) and adjacent mucous membrane produces congestion, and consequent catarrhal sore throat.

The attack usually begins suddenly. It is characterized by general muscular soreness or aching, chilliness, sometimes pain in the back and back of the neck, generally a sense of stiffness in the throat and neck, nausea, temperature increased, varying from 102° to 105°. Generally the entire throat is in a state of catarrhal inflammation, the most susceptible part (*pars minoris resistentiæ*), suffering the most intensely. The tonsils are sometimes covered with small patches of coagulated material, while the remainder of the throat is involved only in catarrhal inflammation. The active symptoms subside in three to five days, and complete recovery occurs within a week. When the glands are much enlarged, as occasionally happens, it may be two weeks before they return to the normal size. The glands are often slightly enlarged, but subside with the fever. They all terminate in recovery. However, it occasionally happens that cases of diphtheria occur during these endemics. It is generally easy to distinguish the one from the other by the second day of the disease, and often from the beginning. Another important fact is that it not unfrequently occurs in a family where there are several cases of the disease, that one will take the form of diphtheria. Albumin has been found in the urine of many of these cases (Ingals[20]), but it is probably due to the same causes which explain its presence in other febrile diseases.

Hot wine gargles have been recommended in these sore throats. Lennox Browne states that menthol, an antiseptic and local anodyne, contracts the capillaries of the nose and throat, and checks secretion, and in consequence of these virtues recommends it in hoarseness and soreness of the throat, in this class of troubles (Bishop[20]). My own experience with this remedy is that in certain cases it acts well, but in other cases it fails to give relief. I have thought that in cases occurring in damp weather, when the mucous membranes are in a state of venous distension, the inhalation of menthol produced better results than in dry weather. The same is largely true of astringent gargles. In dry cold weather, when the mucous membrane is constantly parting with the moisture which forms nature's covering, some more bland treatment will succeed better. In these cases the spray of vaseline (Robinson[21]), or vaseline applied with a soft brush or absorbent cotton, acts very soothingly. I have also in such cases used a gargle consisting of alcohol, glycerine and water, varying the proportions to suit the sense of dryness in the throat.

I have found gargles of milk to be very excellent in the dry form, hot, warm or cold, as the patient prefers. I have been especially pleased with the results of ice and cream. The ice is to be shaved or scraped, and mixed with sweet cream, in the proportion of one of ice to two of cream. This is particularly valuable in small children, who cannot or will not gargle, nor allow the spray to be used. Sugar may be added, or any flavoring extract, to suit the taste. In older patients, the ice and cream may be used in equal proportions. Ice cream serves an excellent purpose in many cases, to control the nausea. This treatment acts well also in those medium cases, where it is difficult to decide whether they should be classed with the dry or moist form.

The essential oils, by spray or nebulization, are also valuable in these dry forms, and are usually very agreeable.

The treatment by anatomization, since its recommendation by Jean Sales-Girons,[22] and later by Dr. Pserhofer[23] before the French Academy, has become very popular, as it deserves to be.

Solutions of chlorate of potash and permanganate of potash, and other astringent preparations, are useful when sprayed into the throat, in the forms of sore throat where the secretion is profuse. They may also be used in the form of gargles. Dr. Gabrilovicz[24] recommends inhalations of peroxide of hydrogen. I have used the peroxide, but it seems to me to be adapted to a special class of cases, or at least to serve a better purpose in special cases, where there is a tendency to the formation of a pelicle on the tonsils, or where the whole secretion is too albuminous. I like to use it as a spray in such cases, and believe its action to be similar to that of the continued action of ozone; that is, I believe it acts beneficially by dissolving the albuminous pelicle when it has been formed, and when it has not already appeared by rendering the exudate incoagulable. If this view is correct, it will be found valuable in the form of inhalation and spray in diphtheria, true croup, and those cases of tonsillitis and sore throat where the exudate contains an excess of albumin and fibrin. Yerba Reuma[25] by atomization is sometimes very valuable. Cases of croupal laryngitis (Curtin and Watson[26]), are best treated by inhalations, although atomization acts well, and the remedy should be determined, as in cases of general sore throat, by the class of inflammation, whether dry or moist. The patient should be kept in bed. Coupard and Saint Hilaire recommend a 3 per cent. solution of antipyrine in catarrhal laryngitis.

In nearly all cases where there is general febrile disturbance, I have found the use of aconite and belladonna (Ringer[27]) invaluable. An excellent protection for sensitive throats is the use of a silk handkerchief in front of the neck, in place of mufflers around it.

When all has been said, it remains to the physician to determine what the treatment in any particular case shall be, not by what the books say, but by studying the class of inflammation present, and the condition and idiosyncrasies of his patient. Then by the use of medicated inhalations and medicated sprays, the cold compress to the throat in croupal cases, together with simple gargles and some simple preparation to equalize the circulation and reduce the temperature, all these cases will recover. The minimum amount of medication that will suffice and the maximum amount of care that can be secured in nursing should be the rule here, as in the treatment of all diseases.

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[1] A System of Practical Therapeutics Hare.
[2] La Semaine Médicale, 1891, 1892.
[3] The Earth. Elisée Reclus
[4] Hygiene. Parkes.

ing, near St. Paul, Minn., was 600 in 1000 soldiers, and at Fort Dearborn, Chicago, was 102 in 1000 soldiers. Other posts are included in his report, and from these Dr. Davis is led to the conclusion that the important factors in the production of this class of diseases are cold, variableness, moisture and high winds. After reviewing a large area and many causes, Dr. Drake gives the ratio of cases occurring at different times in the year as 119.8 in the first quarter, 72.7 in the second, 48.7 in the third, and 99.6 in the fourth. He further makes the statement that the number of cases decreases in the ratio of 31.5 for each degree of latitude, going south.

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It is a matter of common observation that some persons are more susceptible to catarrhal diseases than others; that is, the power of resistance to disease, which every one has to a certain extent, is so strong in some individuals that they will pass through an epidemic unharmed, while the more susceptible are first affected. Those who are susceptible to catarrhal sore throats are liable to have recurrent laryngitis, pharyngitis and tonsillitis, until a chronic form may result. The increased number of capillaries in the cuboid space posterior to the nares (Flint[17]) renders that region a favorite retreat for chronic catarrh.

The habit of wearing mufflers about the neck is liable to make the throat more sensitive, by being usually kept in a state of perspiration, which permits a refrigeration of the skin to occur more easily, and the reflux of blood to the dense network of capillaries in the larynx (Landois[18]) and adjacent mucous membrane produces congestion, and consequent catarrhal sore throat.

The attack usually begins suddenly. It is characterized by general muscular soreness or aching, chilliness, sometimes pain in the back and back of the neck, generally a sense of stiffness in the throat and neck, nausea, temperature increased, varying from 102° to 105°. Generally the entire throat is in a state of catarrhal inflammation, the most susceptible part (*pars minoris resistentiæ*), suffering the most intensely. The tonsils are sometimes covered with small patches of coagulated material, while the remainder of the throat is involved only in catarrhal inflammation. The active symptoms subside in three to five days, and complete recovery occurs within a week. When the glands are much enlarged, as occasionally happens, it may be two weeks before they return to the normal size. The glands are often slightly enlarged, but subside with the fever. They all terminate in recovery. However, it occasionally happens that cases of diphtheria occur during these endemics. It is generally easy to distinguish the one from the other by the second day of the disease, and often from the beginning. Another important fact is that it not unfrequently occurs in a family where there are several cases of the disease, that one will take the form of diphtheria. Albumin has been found in the urine of many of these cases (Ingals[20]), but it is probably due to the same causes which explain its presence in other febrile diseases.

Hot wine gargles have been recommended in these sore throats. Lennox Browne states that menthol, an antiseptic and local anodyne, contracts the capillaries of the nose and throat, and checks secretion, and in consequence of these virtues recommends it in hoarseness and soreness of the throat, in this class of troubles (Bishop[20]). My own experience with this remedy is that in certain cases it acts well, but in other cases it fails to give relief. I have thought that in cases occurring in damp weather, when the mucous membranes are in a state of venous distension, the inhalation of menthol produced better results than in dry weather. The same is largely true of astringent gargles. In dry cold weather, when the mucous membrane is constantly parting with the moisture which forms nature's covering, some more bland treatment will succeed better. In these cases the spray of vaseline (Robinson[21]), or vaseline applied with a soft brush or absorbent cotton, acts very soothingly. I have also in such cases used a gargle consisting of alcohol, glycerine and water, varying the proportions to suit the sense of dryness in the throat.

I have found gargles of milk to be very excellent in the dry form, hot, warm or cold, as the patient prefers. I have been especially pleased with the results of ice and cream. The ice is to be shaved or scraped, and mixed with sweet cream, in the proportion of one of ice to two of cream. This is particularly valuable in small children, who cannot or will not gargle, nor allow the spray to be used. Sugar may be added, or any flavoring extract, to suit the taste. In older patients, the ice and cream may be used in equal proportions. Ice cream serves an excellent purpose in many cases, to control the nausea. This treatment acts well also in those medium cases, where it is difficult to decide whether they should be classed with the dry or moist form.

The essential oils, by spray or nebulization, are also valuable in these dry forms, and are usually very agreeable.

The treatment by anatomization, since its recommendation by Jean Sales-Girons,[22] and later by Dr. Pserhofer[23] before the French Academy, has become very popular, as it deserves to be.

Solutions of chlorate of potash and permanganate of potash, and other astringent preparations, are useful when sprayed into the throat, in the forms of sore throat where the secretion is profuse. They may also be used in the form of gargles. Dr. Gabrilovicz[24] recommends inhalations of peroxide of hydrogen. I have used the peroxide, but it seems to me to be adapted to a special class of cases, or at least to serve a better purpose in special cases, where there is a tendency to the formation of a pelicle on the tonsils, or where the whole secretion is too albuminous. I like to use it as a spray in such cases, and believe its action to be similar to that of the continued action of ozone; that is, I believe it acts beneficially by dissolving the albuminous pelicle when it has been formed, and when it has not already appeared by rendering the exudate incoagulable. If this view is correct, it will be found valuable in the form of inhalation and spray in diphtheria, true croup, and those cases of tonsillitis and sore throat where the exudate contains an excess of albumin and fibrin. Yerba Reuma[25] by atomization is sometimes very valuable. Cases of croupal laryngitis (Curtin and Watson[26]), are best treated by inhalations, although atomization acts well, and the remedy should be determined, as in cases of general sore throat, by the class of inflammation, whether dry or moist. The patient should be kept in bed. Coupard and Saint Hilaire recommend a 3 per cent. solution of antipyrine in catarrhal laryngitis.

In nearly all cases where there is general febrile disturbance, I have found the use of aconite and belladonna (Ringer[27]) invaluable. An excellent protection for sensitive throats is the use of a silk handkerchief in front of the neck, in place of mufflers around it.

When all has been said, it remains to the physician to determine what the treatment in any particular case shall be, not by what the books say, but by studying the class of inflammation present, and the condition and idiosyncrasies of his patient. Then by the use of medicated inhalations and medicated sprays, the cold compress to the throat in croupal cases, together with simple gargles and some simple preparation to equalize the circulation and reduce the temperature, all these cases will recover. The minimum amount of medication that will suffice and the maximum amount of care that can be secured in nursing should be the rule here, as in the treatment of all diseases.

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EARLY DIAGNOSES OF MASTOID DISEASE AND OPERATION, AS A LIFE SAVING MEASURE, IN THE PREVENTION OF PYÆMIC AND MENINGITIC COMPLICATIONS.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Acute suppuration of the middle ear is a disease of very common occurrence, and runs its course in many instances without serious complications, ending in recovery. Other cases result in permanent destruction of a part, or the whole of the drum membrane; while some result in deafness, chronic suppuration, granulations, polypi, etc.

More serious complications frequently occur, such as suppuration in the mastoid cells, with perforation and pyæmia, cerebral abscess, or meningitis from caries and extention of inflammation.

Such complications occur more frequently, I believe, than has generally been supposed by the medical profession, and I think those who have given any considerable time to the study and treatment of aural disease will bear me out in the assertion.

The general practitioner is not awake to the dangers of this disease, and with a hypodermic of morphia, they put the patient to sleep—and the doctor as well—while the true character of the disease is masked and allowed to pursue its destructive course, resulting frequently in death, which is attributed to some other cause.

That this course of treatment has been confined to the general practitioner, I dare not charge, for I believe many otologists have been too inactive and dilatory in these cases, and prone to palliate and temporize until nature has done the work, or the disease has placed the patient in a hopeless condition; as all statistics go to prove.

While I do not wish to be understood as advocating the too free and indiscriminate use of the drill and chisel in acute suppurative otitis media, I do think we may err as far in the other direction: and I believe that the operation of opening the mastoid should be governed by the same sound surgical principles that govern other surgical operations; that we should not delay the operation until pyæmic or meningitic complications put the patient in a hopeless condition, thereby condemning the operation, and operator as well.

In looking over the literature on the subject of mastoid disease, I find no other guide to a diagnosis of pus in the cells, than the external signs and symptoms of pain, redness, swelling, and œdema over mastoid, which must be present to justify an operation; notwithstanding the report of a few cases (notably that of Dr. Knapp's, reported to this society), in which perforation, pyæmia, and death followed acute suppuration in the middle ear, without the external signs and symptoms over mastoid.

Much has been written on this subject, but it seems that we should be able to formulate some better guide to an early diagnosis than we now have in medical literature.

Pain, redness, swelling, and œdema over mastoid are not essentially signs of pus in the cells, though they do coëxist in some cases.

Though there may be cases of extension of inflammation from the antrum through the bone to the mastoid periostium, I believe it is an exception rather than the rule, and that a better explanation is found in direct extention from the middle ear along the periostium, over mastoid process.

I have seen but few cases with pain, redness, swelling, and œdema over mastoid, that have not been preceded by swelling in the external auditory canal proceeding from the tympanum, and extending over mastoid process as periostitis.

These mastoid signs and symptoms have existed with external abscess where the mastoid cells were opened and no pus found. Then why could not the converse be true? That suppuration in the mastoid cells following acute suppuration in the middle ear frequently exists, will not be disputed; but that it exists without external signs over mastoid, or pain referred to that region, frequently ending the life of its victim, I wish to emphasize by a report of five cases, in all of which a diagnosis was made, and four operations with recovery, one without operation ending in perforation, pyæmia, and death, with autopsy.

I have been able to diagnosticate this condition in many other cases where no operation was performed, some of which recovered, but more of whom died with symptoms of pyæmia—cerebral or meningitic complications, but no autopsy could be obtained.

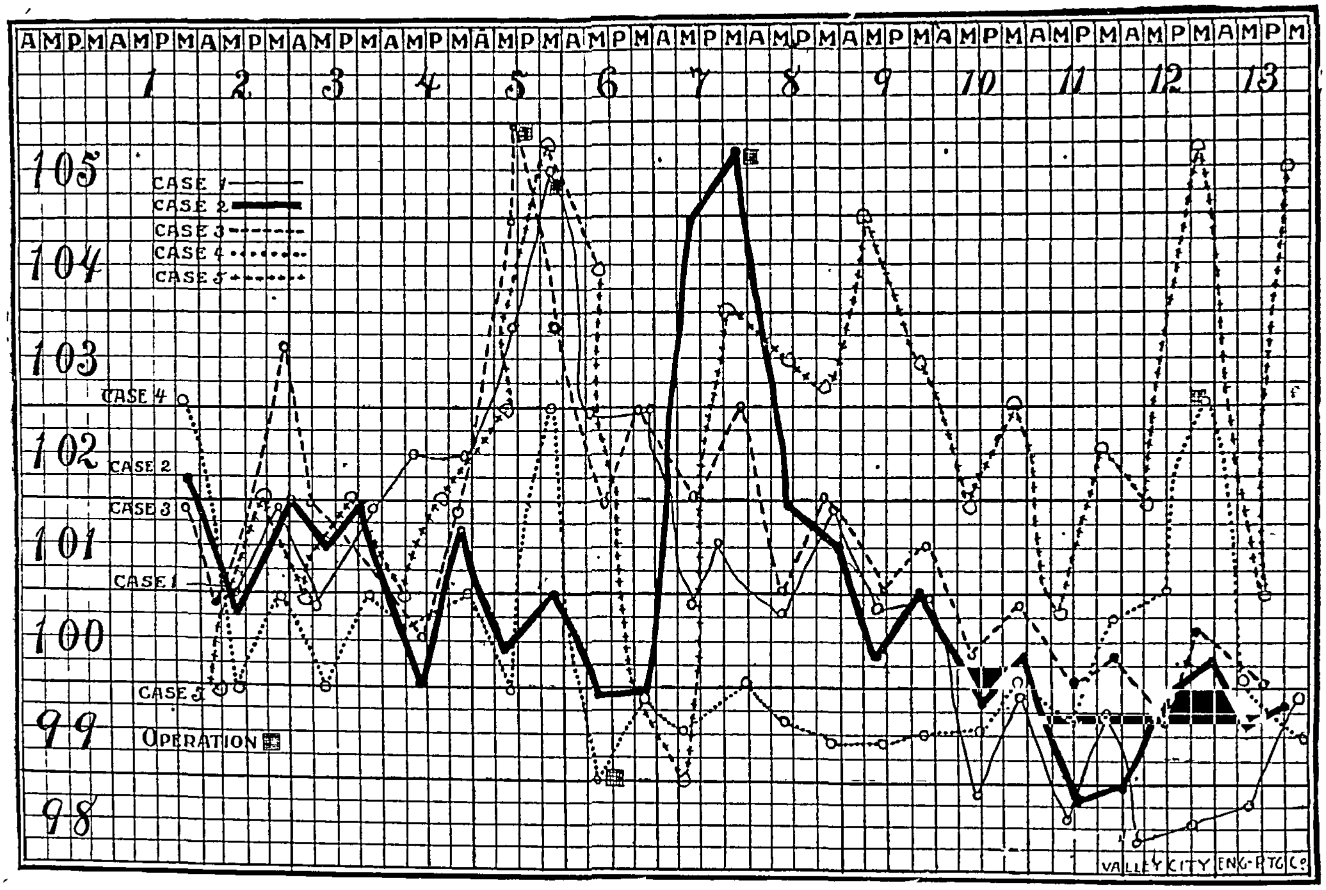
As the external mastoid signs and symptoms are not pathognomonic of pus in the cells, I think they should not be relied upon as a guide to cell complication.

The lining membrane of the Eustachian tubes, tympanum, and mastoid cells is continuous, forming an irregular cul-de-sac; and when the middle ear is inflamed we might well expect inflammation in the cells of the mastoid, by reason of structural continuity.

I believe that in all cases of acute suppurative otitis media, where pus is discharged from the ear in any considerable quantity, after the drum head is freely open and the ear has been thoroughly cleansed by irrigation with hot boracic acid solution every two hours, and Politzerization for two or three days, it must come from an abscess cavity, and could not be secreted by the lining of the tympanum; that when together with offensive discharge there is swelling and bulging in the upper and back of the tympanum, there is pus in the mastoid cells, especially when attended with rise of temperature, and pain in occipital region. When vertigo, restlessness, pain in side of head, or a sense of fullness is present it strengthens the diagnosis of cell complication, and we are justified in exposing the cells whether external signs and symptoms over mastoid are present or not.

The following five cases were those in which an early diagnosis was made, without external signs and symptoms over mastoid, followed by operation or autopsy.

All cases where pain, tenderness, swelling and œdema, or any one of them, were present, I have excluded from this report; as well as where a diagnosis was made without the external signs and symptoms but no operation, the patient afterward dying with symptoms of pyæmia, meningitis, or cerebral abscess, and no autopsy to settle the question of diagnosis.



Temperature chart of five cases of suppurative mastoiditis.

Case 1.—Mrs. B., aged 52. No previous disease of ears; July 5, had severe pain in ear from taking cold. I opened drumhead twelve hours after onset, muco-purulent discharge but little; temperature 100. Afterward temperature ranged from 100 to 101 until the fifth day, when it suddenly raised to 104.2; pulse 120. Discharge free until morning of the the fifth, but not much during that day.

Saw her at six o'clock, P.M.; temperature 104.2; says she feels pain in legs and arms more than elsewhere; no pain, redness, or œdema, or tenderness in mastoid region. Swelling and bulging from upper and back of tympanum. No swelling in external auditory canal. Membrana tympani open at back part over one-half its entire size. Tympanum full of thick, offensive pus. Opened mastoid and found cells full of pus.

Case recovered after three weeks of temperature fluctuating from 98.8 to 100. Hearing in affected ear impaired.

Case 2.—Mrs. S. V., age 24. No previous ear disease. Took cold in right ear April 2. Had ear-ache during night, and until noon of next day, when drum membrane ruptured, saw her soon after, there was some discharge of pus and mucus. Temperature 101, but soon went lower, and remained below that point until the seventh day, when with a chill the temperature went up to 104.6; pulse 110. Quantity of pus diminished, but still quite considerable. Little pain in occipital region. Had chills during high temperature. Can hear but little in left (affected) ear. Feels languid and nauseated. No œdema, pain, or other external evidences over mastoid. No swelling in external auditory canal. Membrana tympani nearly all gone. Swelling and bulging from upper and back of tympanum. Thick pus fills the canal.

Opened mastoid, found about half a dram of pus in antrum. Case recovered in about five weeks, after quite profuse sweating for some days. Hearing for voice good.

Case 3.—Miss M., age 21. Took severe cold by riding horse-back in a cold wind. Had pain in left ear that had been previously affected. Temperature 101, which, under treatment went down to 99.4, and remained until the fifth day at 4 A.M., when it suddenly rose to 104. At 10 A.M., 105, with chill and pain all over body, and some headache on left side. No pain or swelling over mastoid. No tenderness on pressure.

Operated at 11 A.M., and found cells fulls of gelatinous exudate, and thick pus. Free discharge of pus the next day. Patient recovered in five weeks. Hearing about as before the attack.

Case 4.—Mr. D. C. W., age 58; white; American. Saw this case by kindness of Dr. R. H. Spencer. Never had trouble with ears. Had always been healthy. Took a severe cold last Tuesday (seven days previous) had chills and fever. Had frequent chilly sensations. Thursday had sense of heat and fullness in left side of head. Friday nignt went to blow his nose and felt something give way in left ear, after which had some pain in ear, and at night had bloody discharge from ear. Dr. S. was called. Temperature 102.4, pulse 80, and severe pain. Membrane ruptured during night, and pain ceased. Felt well Saturday and Sunday. Temperature 99.

Monday morning at 4 A.M., had severe pain at back and top of head, which was "dull and heavy," was dizzy. No pain, redness, swelling, or œdema over mastoid, no tenderness on pressure. Drum membrane open two-thirds its size. Swelling at upper and back part of tympanum, is bulging, and looks dark and livid. No swelling in external auditory canal. Pus was flowing freely. Tongue coated and dry. Temperature 99.6; pulse 70. Nauseated and looks haggard and pinched. Ear had been irrigated thoroughly every two hours, but was soon full of pus, even in an hour or less. Odor offensive. Was there at 6 P.M., and diagnosticated suppuration in mastoid cells, and advised operating the next morning. Felt so much better the next morning that he did not go to the hospital. Discharge less, temperature 102 at 5 P.M. Aches all over, feels chills "running up and down his back." Wants the operation.

Was taken to the hospital, and assisted by Drs. Graves and Spencer, I opened the mastoid cells with chisel. When first shaving was removed the lining of cells appeared looking livid, the same as swelling in tympanum.

Pus escaped with great force when next shaving was removed. Temperature next morning 98, and remained below 100 for a week when it went up to 102.4 during day. Again gave chloroform and dug out the cells freely; found some pus. Temperature next morning 99, evening 98.4 and has never reached 100 since.

Patient feels well. Discharge free from wound, little from ear. Convalescing.

Case 5.—Mrs. ——, age 42. Was called to see this case in consultation with two of our local surgeons, on the 10th day of illness, and got the following history.

Had earache. Drum membrane was opened on second day, and some pus escaped. The case seemed to be doing well until the fifth day, when patient had a chill, and temperature of 104.8. I found auditory canal and tympanum full of pus. Swelling in right ear, and bulging at upper and back of tympanum, looks dark. Headache. No swelling or pain over mastoid. No swelling in external auditory canal. Temperature 102. Diagnosticated suppuration in mastoid cells, and advised operation; but as the other physicians did not agree with me in diagnosis, no operation was done.

About a week later was called in consultation with three surgeons with same result as before. Dr. Geo. E. Frothingham saw the case three days later, but in absence of external mastoid signs and symptoms, was of opinion that there was not suppuration in cells, but that pus had entered the jugular vein from lower part of tympanum.

I still believed if perforation had occurred it was from the mastoid cells. No operation was done, and after fifty-one days the case died from metastatic abscesses following pyæmia.

An autopsy revealed perforation into lateral sinus, and a clot three-fourths an inch long lying back of petros portion.

The viscera of body were in healthy condition. For particulars, see transactions of Michigan State Medical Society for 1892.

In conclusion would say that, in the five cases just reported, the treatment had been the most thorough in applying leeches, dry heat, blisters, etc., and in the first four, quinine had been given freely. No morphia, or other analgesic was given after the first day. Therefore the absence of pain was not due to treatment.

From a series of cases I have formed the following conclusions:

1. That in acute suppurative otitis media, with the drum head freely open—if, after two or three days' treatment by thorough irrigation with hot boracic acid solution every two hours, and the tube and tympanum cleared by Politzerization, pus continues to flow so that the canal is filled in an hour or two, or saturates a plug of absorbent cotton and attended with rise of temperature and chills without other assignable cause, with swelling and bulging of membrane in upper and back of tympanum, with no swelling from above pointing downward, and no swelling below pointing upward, there is pus in the mastoid cells, and an operation is indicated and justifiable for the safety of the patient. For, as Sir William Wild said a half century ago, "When after the first gush of pus following opening the drum membrane, it continues to flow in any considerable quantity, it must come from a pus cavity, and could not be secreted in the tympanum." (When the above mentioned signs and symptoms were present, I found pus in the cells when opened.)

2. That there is no more reason for delaying mastoid operations, when pus evidently exists in the cells, than for the surgeon to delay operation in suppurative appendicitis, or the gynecologist in pelvic abscess.

3. That the operation of opening a mastoid abscess is not more dangerous to life than opening other abscesses.

4. That if no pus is found in mastoid, it heals quickly and no harm results, but if there is pus or extreme congestion, the operation does good and may save life.

5. That the probability of death from opening healthy mastoid cells is not as great as the probability of pus existing in the cells in cases of acute suppurative otitis media, where the signs and symptoms already mentioned exist.

6. If pus exists in the cells it is a sound surgical principle that it should be removed before it has caused disease of contiguous structures.

7. That when death occurs after mastoid operations, it is from the disease for which the operation was done and not due to the operation.

8. That suppuration in the cells with early suppurative mastoid periostitis, is not as dangerous to life as where the latter does not exist, for such concomitant tends to soften the dense external bone and favors spontaneous external perforation.

9. That when swelling and tenderness in the auditory canal is extreme, so that an examination of the middle ear is difficult or impossible, it should be done under an anæsthetic.

10. That in acute suppurative otitis media, a rise of temperature to 104 or 105, with chills or rigors, does not contra-indicate opening the cells.

11. That chisels are the best instruments with which to open the mastoid, commencing at the tip of the process, and cutting upward and forward.

PERFORATION OF THE LATERAL SINUS.

While using Hamilton's bur-drill in opening the mastoid cells, at a point about a half inch back of, and on a level with, the external auditory canal, I opened into the lateral sinus at a depth of about one eighth of an inch. There was a gush of blood which I stopped by placing a finger over the drill hole; until I could secure a strip of bichloride gauze, this was packed firmly into the drill hole, and a compress and bandage applied and left undisturbed for two days.

I then removed dressings and no hæmorrhage occurred. As no pus had been reached in the first operation, I packed the drill hole with equal parts of boracic acid and iodoform, and again proceeded to open the cells with a hollow chisel, commencing at point of mastoid, cutting upward and forward, keeping close to auditory canal. I reached the cells at a depth of one-half inch, and found pus, which continued to flow freely from the wound for three weeks. In dressing the wound I always took the precaution to wash the pus out of wound with a 1 to 40 carbolic solution without disturbing the packing in drill-hole. I then replaced it with fresh powder. No bad effect followed the accident of opening the sinus, and patient made an uninterrupted recovery.

Case 5.—Mrs. W. Autopsy, by Dr. S. C. Graves in presence of Drs. D. M. Greene, G. K. Johnson, and C. H. Jonston.

Body of a woman fairly well nourished. Height about five feet and six inches. Weight about one hundred and thirty pounds. No external signs of disease except one opening and counter-opening at side of right knee made previous to death for passage of drainage tube.

A. *Thoracic Cavity.*—1. Lungs: both adherent posterior and superior portions of upper lobes to surface of chest wall. These pleuritic adhesions were not recent,showing evidence of a preceding pleuricy. Lungs, although showing considerable hypostatic congestion, were sound as far as macroscopic appearances were concerned. Portions of the mucose heavily congested. Lungs were removed for microscopic examination.

2. Heart: This viscus was normal in every respect.

B. Abdominal Viscera.—1. Stomach, pancreas, liver, spleen intestines, kidneys, and mesenteric glands, all healthy. Gall bladder contained a half dozen calculi of average size.

C. Pelvic Cavity.—1. Ovaries healthy; uterus corpus healthy; cervix had undergone induration and cystic degeneration; cysts six or eight in number, varying in size from a pea to a small marble, contained a thick glary yellowish fluid, and before being incised were very hard to sense of touch. Bladder: This organ was unopened, no evidence of trouble being present.

D. Cranial Cavity.—1. Dura mater normal.

2. Arachnoid œdematous particularly over vault and somewhat on sides.

3. Pia mater, evidently congested: some fluid in subarachnoidian spaces.

4. Encephalon, cerebrum cerebellum, pons and medulla normal.

5. Right lateral sinus as it lay along posterior border of petros portion of temporal bone, filled *with* a *thrombus*, showing evidences of suppurative inflammation.

6. Mastoid cells of right side presented evidence of a pre-existing suppurative inflammation; *mastoid* cells *and* groove for lateral sinus full of pus, and necrosis very evident; tympanum same as mastoid cells; labyrinth inflamed, no suppuration.

E. Cavity of right knee joint presented evidence of acute suppurative inflammation. Tissues undermined; areas of carious bone both on under surface of patella and on both condyles of femur. Tibial articular surfaces apparently sound.

HERPES OF THE BUCCAL MUCOUS MEMBRANE, WITH PRESENTATION OF PATIENT.

Read before the Ohio Medical Association.

BY J. E. BOYLAN M.D.,

OF CINCINNATI, O.

I have the pleasure of presenting to you this afternoon a case of vessicular inflammation of the mucous membrane of the fauces—in itself a rare condition — which I feel sure will prove sufficiently interesting to justify me in taking up a little of your valuable time. The objective symptoms are, just now, fortunately for us, very pronounced; that is, in part at least. The condition is easily seen by direct inspection, and is one which might readily be mistaken at first sight for diphtheria, or possibly for one or two other diseases which are more common in the region of the fauces. In fact, the patient states, that when diphtheria appeared in the house in which she was employed about two years ago, the attending physician—a very capable one—informed the family that she was suffering from that disease. The history of the case is, briefly, as follows:

Three years ago, in Ireland, the patient had a throat affection which began with a febrile attack, during the course of which white patches formed in her throat, which soon loosened, so that she could occasionally detach them as shreds with her tongue. The condition would improve and then get worse again—that is, more patches would form, till after some three or four months it disappeared entirely. Shortly after her arrival in this country, in September 1889, the affection broke out again and it was at that time that it was taken for diphtheria; it lasted, as upon the former occasion, several months, varying in its severity, to finally disappear entirely. In March, 1891 (a little over a year ago), the affection reoccured and it was then that she first came under my observation. When she presented herself, there was partial aphonia; she complained of pain in the throat, and of having had fever at evening for some time past; temperature at the time was 101.

Upon inspecting the pharynx I found located upon the anterior and posterior pillars, and upon the anterior surface of the soft palate, a number of circumscribed, grayish white patches. which at places amounted to a mere film, at others were thick, opaque, membranous in appearance, Upon the right side, two or more of them were confluent and besides these patches, several denuded spots were to be seen, and further, a number of punctate white specks. At first sight the condition resembled that which I had seen in tubercular pharyngitis on one or two occasions. On closer inspection, however, there was wanting the pallor of the surrounding tissue so common in phthisis of the throat and also the infiltration in the immediate vicinity of the lesion; on the contrary, the tissue about the patches was perfectly normal in appearance. Careful percussion and oscultation of the chest gave, as far as I could ascertain. absolutely negative results, and the question of phthisis, if there had been any, was altogether eliminated, in the course of a week or two, by the rapid way in which the affection disappeared at one point, after throwing off the patches to reappear at another.

The patches described, steadily increased in size, so that in a few days from the time they were first seen, they invaded the greater part of the surface of the pillars and the soft palate—the largest of them, with irregular triangular outline, extended from the middle of the uvula, to and over upon the left tonsil. At one or two places, where the membrane was thickest, it had a wrinkled appearance and loosened edges, which suggested that it might be easily detached. Upon attempting to remove it with a forcep, however, I found that in most places, it was quite firmly adherent and that the denuded surface bled upon its removal. Being, I confess, completely at a loss to account for a state of of affairs, the like of which I had never seen before, I consulted with a colleague who sees a large number of throat patients the year round, but to him too the case was as novel as it was interesting and he naturally would not venture upon a diagnosis based upon a single inspection and the history that I could give him. Microscopic examination of quite large flakes which I succeeded in detaching made by expert bacteriologists (at our city hospital) upon two different occasions, gave practically negative results. After seeing the case almost daily for over a month, during which time the symptoms had almost entirely receded and again became pronounced, I noticed that several of the smaller white spots had minute red apparently protruding centers, which suggested that they might be ruptured vesicles, and upon questioning the patient, she stated that when the condition broke out afresh she sometimes felt blisters in her mouth, which very soon broke. With this new light upon the case, I established a very close watch and instructed the patient, who was living in the house, to come to me at once when she thought that blisters had formed, and by this means I was enabled during a period of several months, to demonstrate, entirely to my satisfaction upon two distinct occasions, the presence of vesicles or blebs upon the affected mucous membrane. Upon one occasion two tense glistening blebs upon the side of the uvula — one of them the size of a split pea — upon another a cluster of five or six flatter and more opaque vesicles all of which remained upon the mucous membrane but a few hours and had disappeared after the patient had taken a meal. The condition has now lasted to my personal knowledge with the exception of three weeks in September, uninterrupted, for 13 months, and has stubbornly resisted a varied treatment including the application of astringents—of iron—of solutions of nitrate of silver and of a 50 per cent. solution of resorcine. At no time during the period mentioned was there an invasion of the posterior pharyngeal wall.

Of the vesicular inflammations which affect the buccal mucous membrane, there is but one besides Herpes known to me which includes the majority of symptoms presented in this case—namely, pemphigas and the possibility of its presence here, was suggested to me by Dr. Ravogli, who also kindly saw the case with me and who called my attention to an article on the subject by Dr. Mandelstamm in the

Berl. Klin. Woch., of last year. In works on diseases of the throat, the literature on both these subjects and especially upon pemphigus is very meager. Voltoline, Bosworth (and Cohen), ignore them both entirely. Mackenzie, Stoerck, Bresgen are silent upon the subject of pemphigus. McBride in his new work devotes six lines to pemphigus and twenty-four to herpes. More is to be learned of the throat lesions of these affections from text-books upon skin diseases, as in "Hebra's Handbuch" and the text-books of Kaposi, Neuman and Schach, but in all of these pemphigus of the buccal mucous membrane is very superficially discussed. The most thorough and detailed description of *herpes* of the mouth I have encountered in any work, is that of the ever versatile and thorough Sir Morrell Mackenzie, from which I make the following brief extracts:

"On inspection of the pharynx at the onset of the disease, a variable number of single or grouped, whitish, opaque vesicles can be perceived; they occupy the soft palate, the pillars of the fauces and the tonsils. The number of vesicles varies greatly in different cases; sometimes one or two can be seen, while in the worst instances they are arranged so closely as to become confluent. The duration of the vesicles is very ephemeral, but in many cases they appear in successive crops. The termination of the vesicular stage may take place in three different ways. In the milder cases the vesicles disappear by reabsorption and leave no lesion to mark their former situation. In another variety of the disease the vesicles burst and small circular ulcers result. In a few days these ulcers cicatrize.

In a third or severer form of the disease the ulceration takes place, *but the sore, instead of healing, becomes covered by a false membrane resembling both in appearance and structure, the exudation of diphtheria.*

These phenomena most frequently occur on the palate and are rarely seen on the posterior wall of the pharynx. When the vesicles are very numerous, the patches of exudation may unite at some places, so as to form sheets of false membrane of limited extent. In three or four days, however, the ulcers heal, the exudation becomes softened and detached and the mucous membrane recovers its healthy state." He further states that the disease is in England very rare, and that certain idiosyncracies have also been observed in patients liable to suffer from this affection; thus, "Terdieu mentions the case of a young man in whom herpes of the pharynx alternated for several years with similar eruptions of the prepuce. In one case it attacked a child for three years consecutively."

Hebra, in referring to herpes within the mouth writes as follows: "The appearance of this affection, when it attacks the skin, however, is different from that which it assumes on the mucous membrane. On the cutaneous surface this eruption consists of vesicles distended with a clear watery fluid and arranged in clusters. Within the oral cavity the affection presents different characteristics. The formation of vesicles does not go beyond its earliest stage, for the epithelium of the mucous membrane is too delicate to be able to retain, for more than a very short time, the fluid which collects beneath it. Hence the vesicles soon burst and we then perceive a number of white spots, perhaps as large as lintels' due to the maceration of the epithelium, or if this has become detached, certain shallow excoriations mark the points previously occupied by vesicles."

In considering pemphigus chronicus Hebra states the following:

"In pemphigus bullæ are sometimes found on the mucous membrane of the mouth and throat. When this is the case, the skin also is generally affected, but not invariably. It has happened that blebs have been seen on the mucus tract, while the integument remained free. It is but seldom, however, that the mucus membranes are extensively affected; much more frequently a solitary bleb appears, or a few scattered blebs, previous to or simultaneously with an outbreak upon the skin. It is indeed rather exceptional to observe on a mucus surface real bullæ—that is actual elevations of epithelium, with collections of fluid beneath them. The membrane offers so little resistance that it gives way almost as soon as an accumulation of serum begins to form. It appears as a white membranous covering which is apt to be rolled up by the movements of the tongue and finally separated and spat out." According to Kaposi the blebs or pemphigus differ anatomically from those of herpes and eczema, in that they are very superficially located, their surface being formed by the most superficial horny cell-layer, and this no doubt accounts for their early rupture and the very few occasions upon which they have been seen upon the mucous membranes. In none of the four cases of pemphigus of the mouth and fauces, reported by Dr. Mandelstamm in the article above alluded to, were blebs or bullæ to be discovered. In three of the four cases, no general eruption appeared, while under his observation. He soon lost sight of these three, but learned later that two of them had succumbed to the disease. In the last of the four the diagnosis was corroborated by the final appearance of a typical pemphigus foliaceus upon the neck, breast, stomach and hands. As the clinical picture and the course of the disease in this case, however, corresponded exactly to those presented in the other three he had no doubt as to their being identical.

This fourth case was that of an otherwise quite healthy man who, when he presented himself, complained of a difficulty of swallowing and a disagreeable odor from his mouth of several weeks' standing. The patient had at no time fever, his appetite was good, but he swallowed with difficulty, Examination showed on various parts of the tongue, cheeks, lips and pharyngeal mucous memprane, grayish white or entirely white, sharply defined circumscribed deposits, which were in places quite thin like croupous deposit, in places thicker and more compact, resembling diphtheritic membrane, and which seems pretty loosely attached; on the tongue they were confined to the free edge and under surface, on the interior surface of the soft palate the deposit became confluent to form a large grayish white membrane, from which protruded in many places red islets, which were denuded of their epithelium. On the posterior pharyngeal wall a few deposits were noticeable, the anterior surface of the epiglottis was also covered with a white deposit. The condition suggested at first mercureal stomatitis. It disappeared only to reappear in other places and lasted more than six weeks. The picture and the clinical history therefore, in these four cases of pemphigus, vary in several rather material respects from those presented in the present case. In them the lesions were scattered over a greater surface of mucous membrane and appear also upon the posterior pharyngeal wall. In herpes the lesion is confined to a comparatively small area, and according to several authors, rarely if ever extends beyond the fauces. In none of the four cases of pemphigus were vesicles to be descried upon the mucous membrane. Characteristic of all the pemphigus cases were a very offensive odor from the mouth and excessive salivation, neither of which symptoms prevail in this case. In the pemphigus cases there was at no time fever noticeable, while here as in herpes, it is ushered in with a febrile movement.

To what extent these differences are of diagnostic value I cannot presume to say.

The chronic nature of the case presented ought to be a distinctive feature, for herpes is essentially an acute affection, but there are, as we have seen, exceptions to this rule, and for reasons mentioned above, I believe that we have here to deal with a case of frequently occurring or chronic herpes, if I may use the expression.

I wish finally to apologize for having quoted so much. I did so in the hope of interesting you the more in the case. I would much prefer to show it by sunlight, but as that is not avalaible here, I will train a battery light upon it. You will find thick diphtheritic-like patches covering the pillars and the tonsils on either side, loosened in places, and even hanging in shreds, but at no point extending further back than the fauces.

If, by calling attention to this case, I shall help to throw some light upon a condition which some one of you will meet in the future, I shall have attained my object in exhibiting it.

SOME OBSERVATIONS UPON THE MECHANICAL TREATMENT OF POTT'S DISEASE.

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Since the introduction of the plaster jacket for the treatment of Pott's disease, it has been positively demonstrated that mechanical fixation inducing physiological rest, is competent and sufficient means in the majority of cases; and the jacket alone will fully meet these indications when judiciously applied, provided the disease exists below the middle of the upper half of the dorsal region. It is the mechanical treatment of this particular class of uncomplicated cases of which I wish to speak. I do not include those severe and rapidly developing cases that demand extension together with other means of fixation. The amount of deformity which occurs, where there has been destruction of the vertebral bodies, depends upon the number of bodies involved and the extent of destruction of each, and also upon the treatment which has been employed to restrain deformity. Upon the first condition depends all the deformity that must of necessity occur, as in nearly all cases of recognized spondylitis there must be a deformity more or less pronounced and in accordance with the extent and rapidity of the destruction. It is quite a popular idea that the deformity could have been entirely prevented had restraining treatment been instituted early enough. That opinion, which is enjoyed by a good many men of experience, is only partly true. It is true to the extent that if treatment is commenced early enough to prevent the entire destruction of a vertebral body, then deformity will not occur. But it is not true that deformity can be prevented by any kind of fixation, dressing or restraining treatment if there is entire destruction of the body of a single vertebra, then the deformity will occur in spite of treatment, and in proportion to the number of bodies involved and the extent of involvement. Deformity can be wonderfully modified, it is true, by judicious treatment, but the contraction and solidification of the new organizable material thrown out at the seat of disease will with certainty deform the column. Even though there is but a single body destroyed, the vertebræ above and below will be approximated, and the tip of the spinous process of the diseased vertebra will be tilted upwards and pushed slightly backwards, forming the prominent little nub on the back, and this without any evidence of falling forward of the upper segment of the column, or any compensating curve above or below to indicate that any other than a direct approximation of the upper and lower bodies has occurred, and the column made shorter by the thickness of nearly a vertebra. The first appearance of this little deformity makes diagnosis sure, and with the prompt application of the plaster jacket the patient goes on very comfortably, and makes a good recovery without any increase of the angular curve. So striking are the benefits of the treatment in these, the most simple as well as the most common cases of Pott's disease, that many are led to the erroneous conclusion that if the diagnosis could have been made a few days earlier no deformity would have occurred. This opinion is strengthened by the fact that occasionally diagnosis of Pott's disease is made before deformity occurs, and under prompt and efficient treatment it never does occur. In those cases with a mild and undulating character of deformity the deformity will at once be greatly modified, or even obliterated, and if not obliterated at once, it may in the course of development and corrective force entirely disappear. The foregoing statements of pathological condition have been made for the purpose of showing that the mechanical treatment should not, as is too often the case, aim at the absolute prevention of deformity, or even of correcting deformity that already exists. But its object is more, to prevent unnecessary deformity and to assist in compensation by sustaining the column through the process of degeneration and absorption of the tubercular tissue, the solidification and anchylosis of the adjacent vertebræ by means of ossification of more or less of the new cicatricial tissue, which forms in and around the seat of the disease. When we understand that with destruction of vertebræ there will come deformity, we can with much better judgment apply restraining force than we can if we expect to control deformity absolutely. The results will be better and the treatment more comfortable to the patient. As before stated, deformity must occur where there has been sufficient destruction of the bodies; but there is a class of cases where one or more bodies have been involved, sufficient to produce deformity, and still have enough left to sustain the integrity of the column under the influence of treatment, if commenced very early. In these cases deformity can not only be prevented, but that which does exist, though quite severe, can be entirely obliterated in some instances. There are many of these cases on record, but they are all cases where a considerable portion of the posterior part of the body remains intact, the disease being confined to the front of the body or bodies, or possibly the lateral aspect, in which case there will be a well-marked lateral deviation as well as backward curvature. In these cases which are more favorable for the correction of deformity, if the treatment, which must be most scientific and applied with the best skill, be delayed a few weeks, it will be of little avail—the deformity will be permanent. An indication as to the degree of destruction is found in the character of the backward curve. The sharper the angle the more complete is the destruction of the body, and the less likely to be corrected. A very acute and prominent angle cannot be obliterated. In the application of mechanical treatment in Pott's disease, at or below the upper third of the dorsal region, there are three essential points of fixation to be considered, of which two are in front and one behind. Of the two in front, one is the lower part of the column, or the pelvis, and the other is the upper dorsal spine which can be fixed by means of pressure over the upper part of the chest. The one behind is at the seat of disease and below it. If these three points are well fixed relative to each other, and maintained a sufficient time, the best possible results will follow. To maintain these three points in relative fixation is the problem. It would seem from the history of cases, and the observations of practitioners and clinical experience, that it is either not an easy one, or it is not well understood; for in the majority of cases treated with either jacket or brace, except those treated by the specialist, the support has been defective in one or more of these points. This can be well illustrated by criticising some of the jackets that we have taken off that have been applied by the general surgeon, and in fact teach a better lesson than to rely strictly upon a description of the proper application. For instance, it is common to find a jacket which will average half an inch in thickness throughout, and having been put on without being rubbed down, was not only very heavy but loose and shaky, instead of being hard and tinny in structure. Then again, the one who puts on a jacket of this character, is apt to have a misconception of the dinner pad. In consequence, one four or five times larger than is required, if one is ever required, is used, and that made to cover the entire abdomen, so that when removed the lower end of the jacket can be pulled out behind far enough to enable one to see and feel the deformity. In such a jacket there is no fixation at the lower anterior point. The upper end of the jacket is applied without due regard to the objects for which it is being put on, is usually carried up to the lower border of the axilla, and is made as high and as firm behind as in front; which is, by the way, in front especially, the weakest part of the jacket. The strongest and most rigid part is that which encircles the body opposite the disease. Such a jacket is no support to the upper anterior point where fixation should be made; and with those two points, or even one, unfixed, of what service is the jacket in the treatment? The failures, which have of necessity followed from such indifferent treatment, have led many a good man to condemn the plaster jacket and adopt some form of spinal brace for the mechanical treatment. This, of course, is open to the same criticisms, as it is applied in the majority of all cases from all sources, and especially those turned over by the general surgeon to the instrument maker for treatment, so to speak. The instrument maker places the patient in a brace which has many of the accessories that none but the artisan can appreciate. It usually consists of belt, crutches, pads, extensions and corset waist, etc., etc. In the first place the pelvic belt is made very frail for the purpose of elegance and lightness, and as it is made to encircle the pelvis between the crest of the ilium and the trochanters, it can only be efficient as a means of support for the crutches in those patients who have a good development of the hips, which is not the case with the great majority of cases of Pott's disease. As it practically gives no support to the crutches, which are intended to carry the shoulders, the chief value of such a brace, which is not much, is lost. Then again, the upright which supports the pads behind is secured at the top to the crutches by means of a strap which passes over the shoulders. This is usually the only means of securing the upper part of the column from falling forwards. The shoulders are so freely moveable that the patient is compelled to support himself by muscular action, by holding his shoulders forwards. The pads are rarely ever made to accurately fit the back. This, of course, is not a steady and uniform pressure, and therefore does not meet the first principles in the indications for treatment, namely: those of fixation and rest. When the pads are put on with springs, the apparatus is still more tiresome and inefficient. Often, in consequence of that unremitting spring pressure, the patients have been obliged to leave off the brace or have the springs removed. The only element that the broad band of elastic webbing adds, which is so often put on with the brace, is one of discomfort.

Having enumerated some of the objections to the jacket and brace as we find them applied in practice, it will be in order to suggest the simplest means which can meet the indications of treatment and obviate the errors so often made by the inexperienced. In most of the cases, especially in the early stage of the disease, the plaster of Paris jacket is the most comfortable as well as the most efficient treatment. In the later stages, when the diseased portion of the column is nearly consolidated, the brace becomes the most desirable mechanical treatment. In order to make a good plaster jacket it is necessary to have good material. Not only must the plaster and crinoline be of good quality, but the bandage must be well prepared and of recent make. It will probably not be amiss to say a few words regarding the best method of preparation. The heaviest quality of crinoline should be selected, and the bandages should be 2½ inches wide and 5 yards long. For the purpose of impregnating with plaster the finest meshes and the ultimate spaces between the fibers of which the fabric is constructed, it is advisable to wind the bandage around the hand in the loosest possible manner and secure the roll, or more properly the skein, with a safety pin transfixing the skein on one side. This should be made so loose that the plaster can easily come in contact with all parts. These skeins should be placed in a box with a tight cover, together with a quantity of plaster, and the whole tumbled for some time, which will thoroughly infiltrate the fine plaster in the cloth. To facilitate this process the box should be hung on a pivot and revolved by means of a crank. A box 14 inches square serves the purpose admirably. After the bandages have been thus tumbled with plaster, they are to be drawn through the plaster and rolled in the ordinary manner. Such a bandage fresh made will take the water very readily, and when applied it will be found to have sufficient plaster within it, to rub down smooth and solid. To properly apply the plaster of Paris jacket it is necessary to first make the bottom of the jacket, in order to constitute the lower anterior fixed point. This is done by starting the bandage across the lower part of the back, corresponding to the upper part of the sacrum. Then pass around to the front below the crest of the ilium, and down across the lower part of the abdomen, as low as possible. It very often happens that it does not go low enough. It should be drawn as tight as possible from one anterior spine to the other, and if it is made to go low enough the lower part of the jacket will be almost straight from side to side on its anterior plane in front. This part should be made very strong and heavy in front, and no dinner pad allowed to project from beneath the lower margin. As the construction of the jacket progresses it should become thinner in front and thicker behind until the seat of the disease is reached, when the character of the work should again change to heavy and very high in front, and thin and light behind above the deformity. In putting on a jacket in this way one almost instinctively puts on a figure-of-eight bandage, alternately high and low in front, crosssing the back at or below the seat of the disease, or the middle of the back if the disease be in the lumbar spine. After the jacket is thoroughly dry and hard that portion which is not strictly within the range of a figure-of-eight is superfluous, as suggested in the figure. There is no real necessity for the bandage to extend above the seat of disease behind, and the only excuse for doing so, is that it may stiffen the strong upper anterior part, which is one of the essential points of support. The abdominal portion is equally superfluous, and to the same extent. When the jacket is perfect in the essentials this abdominal portion may be cut away, but should this last be contemplated, the jacket should be constructed with that end in view, which is not advised as an uniform practice. The suggestion is more for emphasizing the principles of construction than to introduce any new thing. When the jacket is to be cut open and bound with lace-hooks it is not desirable to have a deficient abdominal portion. Since having rigidly adhered to the above principles in the application of the plaster jacket, the dinner pad has been more and more neglected, until now it is no longer thought of, and the disuse has never in a single instance been regretted. The only pad that seems to have a never failing purpose is a small, narrow and thick pad over the most prominent portion of the deformity. A pad about ½ or ¾ of an inch wide by ¼ inch thick, placed over the apices of the projecting spinous processes. This can be pulled out from above, leaving a depression on the inside in which the spinous processes can find relief from pressure. At the same time the jacket can be moulded down very close to the back and provide the widest possible surface for pressure, and on the tissues which can best tolerate it. It frequently happens, and in fact it is the common practice for the purpose of protecting the prominent nub on the back, that each side of the spine is provided with a pad. This is a mistake, for, without the pad is very thick, it wears down, and the prominent spine is the only portion in the region of the disease which touches the jacket. It soon excoriates, becomes very sore, and it has often furnished a necessity for the removal of the jacket and the addition of more padding, or cutting out a portion of the back of the jacket to accommodate the projecting spinous process. Then the surrounding surfaces of the back are not in contact with the jacket, and consequently firm and efficient support is wanting, and the additional deformity can take place. When it seems desirable to adopt the brace, the following point should be considered in addition to the principles already referred to: that is, whether or not the crutches should be used for the purpose of carrying the shoulders. Here it may be well to suggest a rule that in a general way will help to decide, although by no means is it without many exceptions. The more vertebræ involved the greater the deformity, and the more serviceable can the crutches be made. Therefore in a case which involves but a single bone, that is not progressive, it is not necessary to put on the crutches, and when not necessary they are a detriment. When several bodies have been destroyed and much deformity exists, with the suspension of the activity of the disease, and before consolidation is quite firm, it is very essential to use them. The patient will instinctively rely upon them whenever he anticipates a sudden movement or a shock of any kind. In most cases they can be dispensed with to the comfort of the patient, long before the back brace is discarded. The brace without the crutches, in its most efficient form is an exceedingly simple affair. It should consist of pelvic belt, two parallel uprights at the back, supporting a large thin pad on each side of the spine opposite the disease, secured at the top by a strap passing from the top of each upright over the shoulder and across the upper part of the chest, and around under the opposite arm to the upright of that side, and a well fitting, thin, long and narrow pad across the upper part of the chest, over which the straps pass.

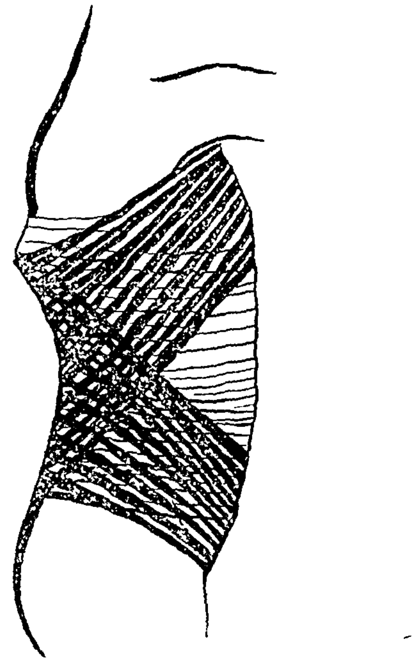


Figure 1.

The pelvic belt should be the usual light belt of

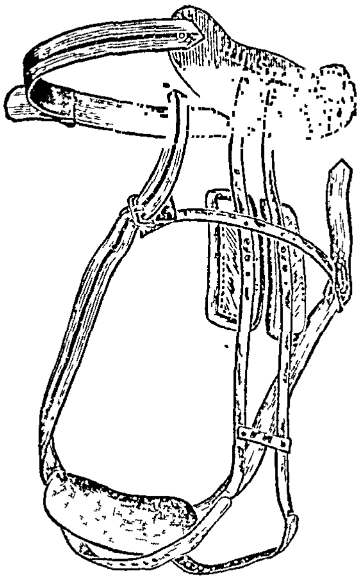


Figure 2.

steel, secured in front by means of strap and buckle; or better still, the back of the belt should be of metal and the front half entirely of leather, and made wide across the abdomen. Such a belt is only intended to keep the lower ends of the uprights in contact with the back, and not to sustain weight. The shape should be such that it will fit the back closely and allow the front part to cross at the lower part of the abdomen. It should occupy almost the same position that a well fitting inguinal hernia truss spring does. This always insures the best support, and without constricting the abdomen in the least. The uprights, two in number, should be secured to the belt by means of a hinge joint which will allow the belt to adjust itself, and pass up the back, parallel, one on each side of the spine, to nearly the top of the scapula, where they should diverge until the upper ends correspond to the junction of the upper surface of the shoulder and the neck, about one inch below it. They should be secured to each other by means of a cross piece of metal at the point where the upper ends begin to diverge, and opposite the tenth rib there should be another cross-bar secured to the upright, made long enough to reach the posterior axillary line when it has been shaped to fit the body. To each end of this cross piece a buckle should be secured, at proper angle, to receive the strap that comes over the shoulder from the top of the opposite upright. Throughout the entire length they should accurately fit the back. In order to accomplish this it is necessary to take the shape of the back on each side of the spine by means of the strip of lead, and transcribe the shape on paper to make a working drawing. The patient should be sustained in as straight a position as possible while the form is being taken. The drawing should also show the exact position of the belt in its relation to the uprights as to angle, height, etc. The pads should be thin, lightly padded and made to fit the surface accurately, and cover as large an area as practical. When the pads are secured to the uprights, it will set the uprights back away from the body, the thickness of the pads at that point, and perhaps double that distance at the upper ends, which is quite sufficient to prevent any unpleasant contact, and secure at the same time a very close fitting brace, with room enough to provide for compensation at the top. From time to time both uprights and pads can be easily changed in shape for the purpose of readjustment. The chest pad can be made of wood, hard rubber, or thin metal, brass being the best of the metals, and easiest of all materials to work. Thin brass can be hammered to fit readily, and then it retains the small studs or buttons well, which are to hold the straps in place. Hard rubber is perhaps the most elegant material, but it is much more troublesome to handle. The upper central part of the pad should rest upon the sternum just below the sternal heads of the clavicle. The upper margin of the pad should slope each way from the center downwards and outwards in a groove below the clavicle and in front of the shoulder, to nearly the lower margin of the pectoral muscles. This groove is bounded by the clavicle and shoulder joint on the upper and outer side, and by the thorax on the lower and inner side. It can be appreciated to an advantage by having the patient with bare chest before you, and with the tips of the fingers trace the groove while the patient is making moderate forward and backward movements of the shoulders. In this way one can readily appreciate the exact position for the upper margin of the pad. This should be traced with a pencil and paper pattern cut to fit. The pad, in the average case, should be about two inches wide, and therefore, when complete, it is somewhat crescent shape. This shape will be found to vary greatly in different patients. The padding should be thick and rounded at the upper and outer parts of the pad, thin and flat below and in the center. The round upper margin can be hammered on when the brass plate is used. In any case, where a metal frame for the pad is used, it should be hammered enough to give it stiffness. The upper margin of the pad should be provided with a post button on each side, corresponding to the uprights, and the lower outer margin or angle on each side should also be furnished with a button. The straps which pass over the shoulders are to be provided with button holes, as close as they can be conveniently made, for the purpose of buttoning on to the chest pad. After the strap has been buttoned to the top of the pad, it may be found more convenient for the strap to pass to the lower button of the same side and then to the cross-bar where it buckles, than to cross to the opposite side as before suggested. Or it may be thought more convenient still to have short straps attached directly to the lower outer angle of the pad to buckle to the cross-bar, and then, of course, the straps attached to the upper ends of the uprights would be short—simply long enough to button on to the upper margin of the pad. In consequence of the rolled and thickened upper margin of the pad, there is a strong tendency for the lower angle of the pad to tilt out, so that in the adjustment of the lower end of the strap it is only necessary to have it tight enough to hold the pad in even contact with the chest. It will then be found that the greatest tension is on the straps which pass over the shoulders. This very simple and inexpensive apparatus, with the proper adjustment of the straps, will sustain the convalescent patient very comfortably and securely, and at the same time not so rigidly but what the patient can, by the slightest movement of the body, relieve any particular point from pressure momentarily, which makes firm corrective pressure tolerable. It also provides for each of three points for fixation, very efficiently.

The reasons why this apparatus is not desirable in the early stages of the disease, are because it permits a greater range of motion of the body, and it is not as comfortable to sleep in, and consequently should not be put on until it is safe to allow the patient to sleep without any apparatus whatever. The jacket furnishes not only the best possible fixation but maintains a greater amount of body quiet and that with the greatest comfort, and it is not uncomfortable at night. When it seems best to use the crutches a very different form of pelvic belt should be constructed. A piece of heavy leather from 2½ to 4 inches wide cut so as to lay flat on the back and then pass around forwards and downwards to the bottom of the abdomen with the upper margin of the leather extending at least an inch above the crest of ilium. This should be thoroughly wet and a wedge shaped piece removed from the upper edge of the leather over the crest, then it snould be accurately moulded and fitted, and the margin of the notch where the wedge shaped piece was removed, closed with stitches. After it has been thoroughly moulded to the form including the crest of the ilium, it should be bound to the patient until it is dry, about six hours. It can then be removed and it will retain the shape of the body. It should then be reinforced with the usual thin belt of steel, which by the way, need not pass farther forwards than the anterior superior spine. The front of the leather is to be trimmed down on its upper margin to an inch or an inch and a half in width, and provided with a lacing of three hooks. To the steel portion of this belt is to be attached the crutches as well as the uprights at the back previously described, which, by the way, should be made from one to two inches longer, as with the use of crutches the shoulders are carried considerably higher. The amount required can be readily estimated by shoving the patient's shoulders up while the measure is being taken. The attachment of the crutches should be by means of a rivet which will permit of forward and backward motion. The ordinary extension bar should be used and the upper or crutch end left perfectly free; no straps before or behind; no elastic webbing around the body or across the abdomen. The belt just described can be fitted upon any patient no matter to what extent the deformity has progressed; there will be sufficient crest found if sought for, over which the leather can be moulded to insure perfect and competent support for the shoulders and this is all that we expect to do with the crutches. In the average case such a pelvic belt will, with ease to the patient, support the whole upper part of the body. It is not tiresome; it does not excoriate. It is not expensive and should always be used when, for any reason, it is desirable to have support from the pelvis. During the last few years the brace has been elaborated into a most complex combination of adjunct bars, supernumerary pads, rachets, rack and pinions, set screws, adjustable extensions, lock and swivel joints, levers, compound and simple, springs of all kinds before and behind, and hinges both false and real, all in graceful proportions with finished and elegant workmanship, ornamented with fancy leather and embroidery until the general surgeon, at least, looks upon one of these highly wrought and elegant instruments with bewilderment, and it is the general surgeon who treats the greatest number of cases of Pott's disease. He knows very well that he has not given time enough to that department of mechanics to suggest any changes, so with the statement that there is nothing too good for his patient, the elegant incumbrance is ordered and the application and adjustment left entirely with the instrument maker.

Thus it comes, and it seems a strange assertion to make, that as the brace has developed in multiplicity of parts and elegance of construction it has deteriorated in usefulness in the hands of the general surgeon. Many an opportunity has been improved to examine patients, both in public clinic and in private practice, who have been enveloped in one of these elegant complexities, and we could demonstrate in most cases that they were absolutely useless. They were made and put on by an instrument maker who works according to certain drawings and rules and he does his best by putting in all the parts as near as possible in the right place. Then he puts it on, which is all he can do. Why it is a failure he does not know, and why should he? Neither does the surgeon, and why should he not? That is the question the solution of which has been the excuse for this paper.

Venetian Building.

UVULOTOMY.

Read before the Section of Laryngology and Otology, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY CARL H. VON KLEIN, A.M., M.D.,
OF CLEVELAND, O.

The most common and the most frequent operation of the throat the laryngologist is called on to perform is excision of the uvula; yet, with all the modern inventions of uvulotomes and with its various methods, none seem to have been devised so as to perform the operation of uvulotomy so the uvula could perform its functions in all its physiological intentions and purposes the same as in a normal condition.

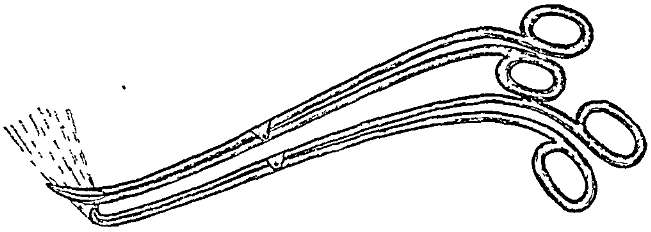
To the people in common it matters not how the operation is performed, as long as it is not cut off too much and the tickling in the throat has ceased. But to the professional man of voice culture, to the singer and the elocutionist, it is a vast difference, as upon the organs of the throat they depend mainly for the existence of a livelihood, the same as the laborer depends upon his hands. Especially the singer, who exhibits his attainments and purity of sound sometimes under the most critical observation, upon which his entire reputation may rest.

A singer with a defective uvula will always exhibit a falsetto. The voice and its degrees of pitch may be accurately executed by the individuals notwithstanding the deformity. Yet, the upper notes are too variable, under the accidental influence of muscular effort, to be the mechanical cause of the fixed and accurate degree of scale. For, when any point of pitch is maintained, the soft palate and its appendage, the uvula, is impaired to a movement that will affect the voice. The change in the palate consists of a convulsive action of the uvula which cannot be performed with one that is stumpy. Again, a stumpy uvula cannot perform the functions of lubricating the soft palate and its kindred organs.

An excision of the uvula, once performed, can be recognized during man's existence, the same as in an amputated finger. When he opens his mouth and makes the sound "ah" the stump contracts and forms a concave bottom.

To overcome the old methods I have devised a curved scissors which cuts the uvula, beginning at the front, and ends upwards back, leaving it delicate and pointy at the bottom, with which a vocalist can perform all the functions of the uvula, the same as within a normal condition.

Not only to avoid the impediment in the singer is my method practical, but in every way I prefer it to the straight scissors. For when the uvula is cut off with a straight scissors it is much harder to heal than with the curved. The food passing by the uvula keeps it constantly irritated, and in many cases it takes a long time before it is thoroughly healed.



The cut I here exhibit is in the back part of the uvula, hence the food passing by does not come in contact with the cut surface.

In speaking the cut surface does not rub on the tongue to produce irritation, consequently it heals readily in a period never longer than ten days. I particularly desire to call your attention to the bloodless ablation of the uvula, by taking hold with long forceps, stretching the uvula downwards, outwards, and cut it at the place where first focused. When the excision is made it contracts, and no blood is visible, as though it was ligated. In sixty-four obscissions in the manner I here describe, all were bloodless.

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

BY FRANK ALLPORT, M.D.,
OF MINNEAPOLIS, MINN.,
PROFESSOR OF CLINICAL OPHTHALMOLOGY AND OTOLOGY IN THE UNIVERSITY OF MINNESOTA, ETC.

(Continued from page 558.)

Case 84.—New York Medical Journal, June 12, 1886. Treated by A. Mathewson. Male, age forty. Right ear. Chronic otorrhœa; pain over mastoid; Wilde's incision; brain complication. Death.

Autopsy—Caries of tympanic roof. Abscess of brain over tympanum.

Case 85.—New York Medical Journal, June 12, 1886. Treated by A. Mathewson. Female, age eleven. Left ear. Chronic otorrhœa; middle ear, polypus; spontaneous opening in external mastoid plate; facial paralysis; improvement; later became worse; pain; vomiting; drowsiness; constipation; optic neuritis; convulsions. Death.

Autopsy.—Dura-mater adherent to petrous bone. Pus in cerebellum.

Case 86.—New York Medical Journal, June 12, 1886. Treated by A. Mathewson. Male, age five and one-half. Right ear. Acute otitis media; drum-head not perforated. Death.

Autopsy.—Caries of roof of tympanum. Basilar meningitis.

Case 87.—British Medical Journal, 1887, No. 1363, page 317. Treated by W. S. Greenfield. Male, age twenty-six. Left ear, Deafness; headache; vomiting; ptosis of lid; optic neuritis; sub-normal temperature. Semi-comatose.

Diagnosis.—Abscess of temporo-sphenoidal lobe.

Operation.—Skull trephined; dura-mater incised; pus found; irrigation; drainage. Recovery.

Case 88.—Canada Lancet, November, 1881. Treated by G. S. Ryerson. Child. Left ear. Scarlet fever; acute purulent otitis; mastoid pain; swelling and tenderness; pain in head; ptosis of right eyelid; divergent squint of right eye; both pupils dilated. Coma; mastoid opened; pus found; improvement; later, became worse; vision poor; optic discs swollen; fever; delirium. Death.

Autopsy.—Dura-mater adherent to skull. Pus on surface of both superior lobes. Purulent thrombi in lateral sinus.

Case 89.—Archives fur Ohrenheil, Vol. 26, page 1. Treated by Wagenhauser. Acute otitis media. Left ear. Mastoid operation. Death.

Autopsy.—Purulent meningitis. Inner plate of mastoid carious, and perforated. Inner surface of petrous bone covered with extensive granulations.

Case 90.—Archives of Otolgy, January, 1891, page 1. Treated by Harry Friedenwald, of Baltimore. Male age seventeen. Left ear. Chronic otorrhœa; had an abscess lanced behind his ear years ago; pain and dizziness; aural polypi; left-sided deafness; chills; headache; some fever; tenderness behind ear. Later, chills and high fever.

Operation.—Von Bergmann's landmarks were followed, viz.: from a point 4 cm. behind the external meatus, in a line made with the lower margin of the orbit, ascend perpendicularly for 5 cm. to reach the point for trephining. No pus. The mastoid was then opened and pus and cholesteatoma were found. Death.

Autopsy.—Pus in the pia-mater covering the surface of the left frontal and parietal lobes. Perforation of inner mastoid plate. Purulent thrombus in lateral sinus.

Case 91.—Archives of Otolgy, 1879. Treated by T. M. Pierce. Female, age thirty-four. Left ear. Chronic otorrhœa; hard swelling in front of ear; granulations in meatus, concealing necrosis; pain in left cheek and parietal bone; left facial paralysis; pain in vertex and occipital region; carious bone discharged from ear; meatus very carious; later, the entire area of disease had fallen in, comprising the external meatus, up to the level of the drum-head, exposing the temporo-maxillary articulation; later, condyle of the ramus of the jaw now exposed; later, the area of disease was now almost large enough to admit the closed fist; hernia cerebri appeared; later, paralysis of right side with aphasia; constipation. Death.

Autopsy.—It is not necessary to detail the destruction of bony and other tissues. It was terrific. Even the aqueductus Fallopii, the semi-circular canal, and the carotid canal were exposed. The temporal bone presented a circular aperture through which the tip of the temporo-sphenoidal lobe protruded.

Case 92.—Transactions American Otolological So-

ciety.—Treated by S. Sexton of New York City. Purulent otitis media; caries of the attic, antrum, and tympanum; lymphadenoma; facial paralysis. Death.

Autopsy.—Inner wall of attic gone, leaving the semi-circular canals exposed. Caries of antrum and mastoid cells. Purulent meningitis.

Case 93.—American Otological Society, July 30, 1887. Treated by Roosa, of New York City. Male, age eleven. Right ear. Painful swelling over ear; abscess opened; no fistula. Death.

Autopsy.—Abscess in temporo-sphenoidal lobe. Encapsulated. Drum-head perforated. Upper meatus necrotic. At junction of mastoid and squamous, necrosis was present. Meatus and mastoid cells filled with caseous pus.

Case 94.—Medical Times, 1885, Vol. 2, page 395. Treated by Parker. Male, age six. Chronic otorrhœa. Abscess above ear; opened; coma; convulsions. Death.

Autopsy.—Necrosis of the floor of the middle temporal fossa, corresponding to position of middle ear. Adhesion between brain and dura-mater. Perforation of dura-mater. Abscess in temporal lobe. Mastoid cells filled with cheesy debris.

Case 95.—Archives of Otology, March, 1884. Treated by T. G. Sutphen. Male, age forty-four. Both ears. Chronic otorrhœa; acute exacerbation; pupils contracted; aphasia; seventh nerve on left side paralyzed; choked discs both eyes; necrosis left external meatus; paralysis right arm and leg; an opening was made into the cranial cavity by way of the meatus and mastoid, but no pus was found. Death.

Autopsy.—Abscess in anterior and middle lobes of left hemisphere. Encapsulated. Necrosis of petrous.

Case 96.—Archives of Otology, March, 1884. Treated by T. G. Sutphen. Male, age twenty-one. Right ear. Chronic otorrhœa; acute exacerbation; paralysis of right abducens muscle; sight impaired in both eyes; swollen discs both eyes; fever and chills; coma; probe can be passed into cranial cavity by way of upper portion of meatus; no pus. Death.

Autopsy.—Thrombi in right lateral and superior longitudinal sinuses. Caries in the sulcus for the lateral sinus. Necrosis of superior surface of the petrous. Caries of meatus, tympanum, and walls of mastoid.

Case 97.—Archives of Otology, June, 1881, page 121. Treated by S. Moss, of Heidelberg. Male, age twenty-three. Left ear. Chronic otorrhœa; polypus; paralysis of left facial nerve; total deafness left ear; vertigo; coma. Death.

Autopsy.—Abscess in left cerebellum. Encapsulated.

Case 98.—Archives of Otology, March, 1894. Treated by A. Hedinger. Male. Left ear. Acute purulent otitis; fever; fluctuating; swelling of left parotid gland; opened; found pus. If swelling is pressed, pus may escape from external meatus; coma. Death.

Autopsy.—Much pus under dura-mater and arachnoid. Purulent thrombus in superior petrosal sinus. Ulcer in this sinus communicating with the pyramid. Carious opening connects cranial cavity, tympanum and mastoid antrum. Ulcer in transverse sinus. Pus in antrum and tympanum. External meatus carious.

Case 99.—Archives of Otology, March, 1894. Treated by A. Hedinger. Female, left ear. Acute purulent otitis; fever; polypus; removed; granulations; swelling of glands below ear and frequent attacks of pain in the entire left half of head; vertigo. Death from tuberculosis.

Autopsy.—Ex. meatus carious. Tegmen-tympani carious. Between bulbus venæ jugularis and bony portions of Eustachian tube, there were two fistulæ leading into the pyramid. Tympanum carious and purulent. Internal wall of carotid canal is carious. Thrombus in carotid artery. Mastoid antrum filled with cheesy pus.

Case 100.—Archives of Otology, June, 1885. Treated by Herman Rothholz. Male, age twenty. Right ear. Chronic otorrhœa; pain in vertex; deaf; drum-head gone; polypus; partial paralysis of auditory nerve; temperature and pulse fairly normal; constipation; stupor; delirium; unconsciousness; divergent strabismus; herpes on right cheek. Death.

Autopsy.—Dura-mater congested. Purulent leptomeningitis, especially at base. Communicating abscess in right cerebellum. Encapsulated. Drum-head gone. Pus and polypus in tympanum. Ossicles gone. Chorda-tympani destroyed. Fallopian canal full of pus. Facial nerve lies exposed in tympanum. It looks normal as it passes through the tympanum, whilst from the gangliform swelling to the internal auditory meatus, it is inflamed. The acoustic nerve presents the same general appearance. Pus in vestibule and cochlea. The petrous bone is saturated with pus.

Case 101.—Archives of Otology, December, 1886. Treated by T. G. Sutphen, Newark, N. J. Male, age twenty-five. Right ear. Chronic otorrhœa, resulting from a blow on the ear. Four years before coming to Sutphen, had an abscess behind the ear, which was opened, and healed; swelling recently recurred with pain; meatus swelled; tympanum filled with granulations and has carious bone; abscess opened, and communication with tympanum established; improvement; later, the conditions became re-established in a more aggravated form; a fistulous opening existed just below the external meatus, through which pus escaped; carious bone in this fistula; water injected into the meatus escaped into the mouth and fistula; later, vomiting; headache; aural hæmorrhages; fever; pain; delirium. Death.

Autopsy.—The bone in the region of the middle ear had been changed into one large carious cavity. Opening into internal carotid artery. Cerebellum abscess communicating with carious cavity.

Case 102.—Archives of Otology, March, 1880. Treated by Thomas R. Pooley. Male, age thirty. Right ear. Chronic otorrhœa; pain in right ear and right side of head; swollen and tender mastoid; deaf: Wilde's incision; carious bone was found; trephining refused; chills; delirium; mastoid opened: pus found: coma. Death.

Autopsy.—Meningitis at convexity and base. Red inflammatory softening at apex of temporal lobe. Pus in pia-mater and arachnoid. Upper surface of cerebellum inflamed. Pus in tympanum, mastoid antrum and cells, vestibule, semi-circular canals, Eustachian tube, and canal for tensor-tympani. Necrosis in tympanum. Incus and stapes gone.

Case 103.—Archives of Otology, June, 1887. Treated by Barr and McEwen of Glasgow. Male, age nine. Right ear. Chronic otorrhœa; acute exacerbation; mastoid abscess; opened; found pus: no improvement; fever slight; ptosis of right eye; paresis left internal rectus and left orbicularis-palpebrarum;

veins right side of head congested; right mastoid muscle rigid; pain on pressure of position of vein which passes through the posterior condyloid foramen; dense stupor; pulse slow and feeble. Constipation.

Operation.—General anæsthsia; thorough antisepsis; skull trephined one and one-half inches above and one-half inch behind the centre of the external meatus; dura-mater opened; dura-mater and pia-mater congested; a hollow needle was inserted toward the eminence of the petrous bone; pus found, three-fourths inch deep; the skull was at the same operation again trephined in the base, just above the osseous boundary of the external meatus, involving the squamo-petrosal suture; the abscess was reached; irrigation; chicken-bone drainage tube; antisepic dressings. Recovery.

Case 104.—Archives of Otology, September, 1889. Treated by William McEwen of Glasgow. Male, age seventeen. Left ear. Chronic otorrhœa; unconscious; weak and slow pulse; optic neuritis; nearly moribund; carious sinus into mastoid cells; vomiting; pain in head; chills. Left hemiplegia-

Operation.—Mastoid opened; carious matter expelled; lateral sinus exposed, on which he found granulations; the bone was then perforated further back than the groove for the lateral sinus; pus escaped from over the cerebellum; chicken-bone drainage tube; antiseptic dressings. Recovery.

Case 105.—British Medical Journal. November 8, 1879. Treated by Thomas Barr of Glasgow. Male, age seventeen. Left ear. Chronic otorrhœa; vomiting; pain in head; stupor; tremors; convulsions. Death.

Autopsy.—Left temporo-sphenoidal lobe adherent to the bone beneath. Abscess in temporo-sphenoidal lobe. Encapsulated. Two carious openings in petrous bone. One in the tympanic roof; the other in the groove for the lateral sinus, communicating with the mastoid cells.

Case 106.—Glasgow Medical Journal, July, 1880. Treated by Thomas Barr of Glasgow. Male, age fourteen. Left ear. Chronic otorrhœa; vomiting; pain; coma; spasmodic contraction of flexors of arms and legs. Death.

Autopsy.—Abscess in temporal lobe. Drum-head gone. Polypus in tympanum. Stapes gone.

Case 107.—Glasgow Medical Journrl, July, 1880. Treated by Thomas Barr. Male, age seventeen. Left ear. Chronic otorrhœa; aphasia; constipation; unconsciousness; paresis of right side; coma. Death

Autopsy.—Abscess in left temporal lobe. Carious fistula in roof of antrum. Carious opening in sigmoid flexure. Carious opening in posterior upper wall of ex. meatus. All the fistulæ communicated with the mastoid cells.

Case 108.—Glasgow Medical Journal, July, 1880. Treated by Thomas Barr. Male, age twelve. Left ear. Chronic otorrhœa; pain in mastoid and occiput; chills; vomiting; constipation. Death.

Autopsy.—Pus beneath dura-mater on posterior surface of left petrous bone. The walls of the left lateral sinus were thickened and detached from the bone by underlying pus. Mastoid cells filled with cheesy pus.

Case 109.—Treated by Remmel. Right ear. Chronic otorrhœa. Medium temperature and pulse; pain in head and neck. Œdema and tenderness over mastoid; later, right facial paralysis; œdema of right upper eye-lid; delirium; anæsthesia right half of face; diarrhœa. Death.

Autopsy.—Caries of tympanum. Thrombus in right lateral sinus. Phlebitis of jugular vein. The thrombus in the lateral sinus extended through the inferior petrosal sinus to the right cavernous sinus, thence through the circular sinus to the left cavernous sinus, which was filled with disorganized clots and pus.

Case 110.—Treated by Taylor. Chronic otorrhœa; delirium; strabismus; diplopia; sudden rise and fall of temperature; retinal veins large and tortous. Death.

Autopsy.—Thrombosis of lateral sinus. Thrombosis and phlebitis of jugular vein. Abscess in lungs.

(*To be continued.*)

HYPNOTISM IN ITS RELATIONS TO MEDICAL JURISPRUDENCE.

Read before the Medico-Legal Society of Chicago, October 1, 1892

BY MR. E. O. BROWN,
OF THE CHICAGO BAR

I can hope to do little more than call your attention to the importance of the interesting subject which I have undertaken to discuss to-night. No one can realize better than I, how entirely inadequate my presentation of it must be, because of the limitations of time, and opportunity for preparation, in the midst of occupations which are continuously engrossing. If I can awaken an interest which shall result in a discussion between my learned brethren of the two faculties here present, I shall have accomplished quite as much as I dare expect.

That the subject *is* an interesting one, I think no one can truly deny. Within a little more than ten years an entirely new factor has been introduced into the problem of legal responsibility. A physical, or perhaps, more properly speaking, a psychological state, with which neither the laws, nor the lawmakers of any people have concerned themselves; the existence of which, indeed, they have never seemed to know, has been discovered to exist. It is a state which is neither sanity nor madness, and neither sleeping nor waking—as these terms are generally used. In it, a person must be considered as irresponsible for his words, his thoughts and his acts; and yet, in it he has all the exterior characteristics of a person fully awake, reasonable, and master of himself. This is startling enough by itself, and to deal with it properly, would require machinery very different from that by which our courts now endeavor to determine questions of sanity and insanity. When to this proposition is added the further one, that a person in the hypnotized state of which I speak, becomes frequently an automaton in the hands of his hypnotizer, and that an action, good, bad or indifferent, suggested by the hypnotizer to the subject, will, in a large proportion of cases, be carried out by the subject after waking, however abhorrent it may be to his natural character, and carried out frequently after an interval of many days, weeks, or even months, the imagination itself finds it difficult to grasp all the complications in social and legal relations to which it may give rise.

How recent is all the knowledge which we have upon the possibilities of the hypnotic state, is a fact within the personal observation of all of us here.

When I was in college, only twenty-five years ago, I remember well that I knew both a natural (as the term was then used) somnambulist, and one in whom the state was regularly induced for therapeutic purposes.

The first was a class-mate, who upon many occasions, in his sleep performed strange and fantastic actions, which became widely known among his college friends. A peculiarity often remarked upon, was his complete recollection during one sleep-walking adventure of that which had taken place in a previous episode of the same nature, and his complete forgetfulness during his normal waking state of either. But I do not remember that even in a community of students, who would naturally be supposed to be interested in such matters, the how or why of this double personality—for in effect it was nothing else—was ever discussed.

The second case was much more notable, and did provoke, among the limited circle which was acquainted with it, much wonder and curiosity. It even, I think, found its way into the work upon mental philosophy of the late Dr. Wayland, President of Brown University.

A young girl in Providence, named Winsor, had suffered through accident a serious injury to her spine. She became bedridden, and for a number of years, and until her death, remained so. At first she suffered terribly from inability to sleep, and although sometimes falling into a comatose condition, anything like true rest was impossible to her, until it was found by her physician, that certain manipulations by himself on or about her head, removed the nervous restlessness which was always present, but increased at the coming of night—and threw her first into a more cheerful and quiet state of mind and body, which passed afterward during the evening, into a comparatively quiet sleep. But almost contemporaneously with this discovery and its practical application, came strange mental and physical phenomena. The right hand and arm of Miss Winsor were, in her normal state, paralyzed. In the condition into which she was thrown by the doctor's manipulations (a condition which is now familiar enough to investigators and experimenters in hypnotism under the name of the "hypnotic trance," or sometimes "induced somnambulism"), this arm and hand became capable of use and, indeed, the more efficient of her members. Another strange thing developed itself. Her manner and disposition changed in the hypnotic state. Her capacity for various kinds of handicraft was wonderfully increased in this induced condition over that which she possessed in her normal state. She seemed to have greater vigor, vitality and energy; and in this induced state, and for many hours during each evening, she would draw, make fancy work, and do many other things for which she felt no disposition and no sufficient strength during the day. And finally she developed a personality in the somnambulistic state as distinct as possible from that of her daily life. Of all the acts done and experience suffered during the day she had a perfect memory nightly; and she also recollected everything which had taken place on preceding *nights* and in her secondary state—while during the day she was as entirely oblivious of everything which occurred between the times of her being put into the hypnotic state and her waking in the morning, as healthy persons are of that which takes place about them while they are in a sound sleep.

This case was one which lasted through many years; the physician in attendance being kept by it, to the detriment of his own health, constantly at home, for it was found that it had a very serious effect upon the condition of his patient if any other physician attempted to fill his place, and induce the hypnotic or somnambulistic condition, which had become to the patient her only method of rest.

I have spoken at length of this case, which came under my own immediate and very frequent observation, simply to emphasize the difference between the condition of medical knowledge upon the subject then and now. The condition of Miss Winsor was a marvel—hardly credited by those unfamiliar with it. Frequent charges of imposture were made against her, and her physician, whose devotion to his patient through long years is entitled to the greatest possible admiration, was viewed, because of his simple narration of undeniable facts, with suspicion and dislike by some of his professional brethren, who should have known far better.

But all this is changed. To-day it is as easy to refer the case of Miss Winsor to a well-known class or category of pathological conditions, as that of an ordinary fever patient. All the peculiarities of her state have been duplicated and reduplicated hundreds, and indeed thousands of times. That which was in her case the result of disease, has been shown by experiment to be capable of production in persons of normal health, but of peculiar sensitiveness to so-called hypnotic influence.

And the hypnotic state into which such persons have been thrown has been analyzed, tested, and one might almost say dissected—not, of course, to anything like a complete knowledge of the subject, but to a wonderfully increased and developed one.

Twenty years ago the world did not believe in hypnotism. In 1866 Dr. Liebault, today one of the most noted names in all matters of this nature, published a book called "Sleep and Kindred States of Being," in which he set forth certain theories, which have since been almost universally accepted—and but six copies were sold. There had been, of course, for an hundred years, an acquaintance by medical men with the so-called phenomena of animal magnetism. The French Academy of Sciences published a report concerning Mesmer—partly charlatan, partly mystic and partly scientist—but there was so much during the years which followed of undeniable quackery, mixed with the so-called mesmeric, or magnetic phenomena, that it was not until such men as Charcot, Bernheim, Beaunis, Richer, Richet, Janet and others known to the world to be the greatest of living neurologists, took up the subject, and eagerly pursued the fascinating inquiries that it suggested, that enough unprejudiced and unashamed interest was awakened in other scientific minds to bring about any considerable increase of definite knowledge upon the subject. But to day, although it is in France particularly that the study of hypnotism is pursued systematically, and its therapeutic uses acknowledged and enforced, yet to the men who are constantly carrying on and pressing the investigation at Nancy and at Paris, at Havre and Bordeaux, the whole medical world, as I understand, looks, at least with respect, if not with deference; and there is little skepticism as to the results which they have achieved, and but little dissent from the propositions upon which they agree.

It is true that great differences of theory exist between the so-called rival schools of Paris and of Nancy. Dr. Charcot and his colleagues at Paris—Janet, Binet, Ribot and others, hold that hypnotism is a pathological condition produced by peculiar and extraneous action upon the nerves, and style it abnormal. The doctors at Nancy, upon the other hand, represented by Bernheim and Liebault, and other great names, entertain the view that there is nothing abnormal about hypnotic sleep; that it is normal sleep hypnotically produced, and produced entirely by suggestion. They say that hypnotism is not a pathological condition, but a psychological state, and that all the extraneous machinery used by the Paris school in inducing it are mere signs to the patient of what is expected of him, and that the fact that hystero-epileptic patients are more easily hypnotizable than healthy persons, means simply that they are more suggestible.

So as to the value of hypnotic suggestion in curing diseases, trifling or serious; and as to the matter with which my paper is more particularly concerned, criminal suggestions, or suggestions affecting legal rights and relations, there is serious and grave controversy between men of equal repute, and of equal opportunities and capacities for observation. I do not by any means intend to venture to-night upon a discussion of these disputed questions. I am not so presumptuous as to consider my opinion valuable to this company, nor is it within the scope of the purpose with which I prepared this paper. But, as I have above indicated, certain things are agreed upon by these mentioned investigators. And these things upon which there is no longer controversy, are sufficient to establish the importance of the suggestions which I purpose to make concerning the relation of hypnotism to medical jurisprudence.

The propositions then upon which there may be said to be substantial agreement, are concisely, as I understand it, as follows:

By various methods, most of them, at least, involving some fixation of vision, and resulting in nervous fatigue, coupled with more or less authoritative actions or command on the part of the hypnotizer, a very considerable proportion of persons upon whom the experiment may be tried without their resisting it, can be thrown into a hypnotic state; that is, into a state of induced somnambulism, in which, like the Winsor girl, of whom I have spoken, they can think, speak and act—their eyes are open, and they present the appearance of a waking person, and yet to a greater or less extent they are irresponsible and, apparently, indeed, of a more or less different personality from their usual and normal one. This state is induced in the subjects experimented on or therapeutically treated at the hospital of La Salpetriere, at Paris, simply by directing the attention of the eyes by an upward and inward squint upon some bright object held slightly in front of and above them, while a few passes of the kind familiar to most of us as magnetic, or mesmeric, are made on or in the vicinity of the head—or else, pressure is used upon the eyeballs or at other points on the head.

At Nancy, on the other hand, the state is generally induced by a rapid rotary and alternating motion of the patient's fists before the eyes, coupled with extremely imperative commands to sleep.

It is only a portion of the persons upon whom the attempt to hypnotize is made who can be to any extent brought under its influence, even though they profess to be willing; and it is a much smaller proportion who are, in the language, of the French savants "tres bonnes somnanbules" that is, to a high degree "suggestible"; and therefore, the persons to whom the criminal suggestions are made of which I purpose to speak, could be of much danger.

Prof. Liegeois, of the law department of the University of Nancy, and an eminent authority upon this matter, belonging too to the school of investigators which sees the most danger in this matter of possible criminal suggestion, calculates the number as 4 out of 100 in any given community. But, as he well remarks, inasmuch as this in the city of Paris alone means 100,000 persons, the percentage is not insignificant. In certain classes of people, of course, greater amenability to the influences described is to be found than in others. Thus, hystero-epileptic patients are made by the physicians of Paris almost the only subjects of their experiments—so much more readily do they respond, in their opinion, to the suggestions which are made. But it is quite certain, nevertheless—and from this the Paris school does not dissent—that it is by no means *necessary* in order that a subject may turn out to be "unetres bonne somnambule" that he or she should have any symptoms of hysteria or epilepsy. Women are more susceptible than men; children than adults.

Dr. Berillon, in a recent paper before the Psychological Congress, just held in London, insists that eight out of every ten children from six to fifteen years of age, no matter how robust and healthy, are susceptible of being sent into a profound sleep after the first or second attempt. And this was his conclusion after experiments upon 250 children of both sexes, taken from all classes of society.

After one successful attempt has been made by a given operator upon a given subject it is constantly easier, if the subject still continues to submit to the experiment, for the hypnotizer to induce the desired condition. And, in a very short time, if the person is a good subject, very slight suggestions of what was originally necessary to produce the hypnotic condition, will be sufficient to throw the patient into a trance.

And for this result, with those who have been often before treated, it has been thoroughly proven at La Salpetriere that fifteen seconds are sufficient. Or rather the inducement of the state is instantaneous—a quick command—a clap of the hands, is sufficient. The quarter of a minute will suffice for the production of the hypnotic state, the suggestion of some act thereafter to be performed, and the awakening. The awakening of the subject is generally effected by blowing upon the eyeballs.

Many strange things. not within the purview of this paper, can be predicated of this hypnotic state. But that which I am about to set forth, although I would scarcely dare to call it in the bewildering variety of results which have been attained—the strangest, is the one to which alone I would direct your attention. It is that the hypnotizer can, during the continuance of the hypnotic state in his patient, suggest to him the commission of a given act, hours, days or weeks, indeed, ahead, and that suggestion becoming a fixed idea will, in the case of the good subject—certainly be committed by him after his awakening—as surely as a stone dropped from the hand will fall to the ground. Nor is the state in which he performs the act that of *apparent* somnambulism. In the hypnotic state proper, or in the ordinary hypnotic state, the subject is passive to a greater or less extent. Although, as I have said, he can think, speak and act, he thinks, speaks and acts mostly by excitation from without. He has more or less the appearances familiar in somnambulists. But the awakening seems to be thorough. Before that time arrives for the commission of the suggested act, he is apparently in an entirely normal state. But when he commits the act, and thus realizes the suggestion which has been made, one or several hours, or several days it may be, in advance,—although he must certainly be, so the authorities agree, again in a hypnotic state in the largest sense of the word,—he has, for all who see him walk and speak and act, the appearance not of a somnambulist, but of a man fully awake. Nor will the person committing the act, *until he is again placed in the hypnotic trance*, remembar that any suggestion has been made to him. He may strenuously deny it—all that he may know is that he feels toward the commission of the act an absolutely irresistible impulse.

I have sufficiently indicated, I think, by this statement as to the conditions which bring about, and which follow from the hypnotic trance, the ways by which it may touch in many points, legal and social relations. It is true that in France, where this subject of the relations of hypnotism to medical jurisprudence have almost solely been treated, the dispute waxes hot as to how far actual crimes of a serious character have been or are likely to be, the result of criminal suggestion made by a hypnotizer upon his willing or unwilling subject. But all the authorities from Charcot down agree as to the possibility, and admit a certain danger—how *great* that danger may be, is the only point concerning which they differ.

The school at Nancy are inclined to a pessimistic view of the matter; they of Paris, to a much more cheerful opinion. Certain it is that criminal suggestions have been made to many of the subjects of the professors and doctors at Nancy, which have been in appearance carried out to the letter, precaution, of course, having been taken against actual bad results.

Thus, one patient of good character was caused, by suggestion, to place the muzzle of a revolver close to her mother and fire upon her—not knowing that the pistol was not loaded, and having every reason to suppose that it was. So too, a powder, which a patient was told was a poison, was administered by him to his aunt; and numberless cases of small theft for the purpose of experiment have been suggested, and in every instance carried out. But Charcot and the Parisian school rather scoff at the value of these experiments. They by no means suggest imposture or simulation—the character of the experimenters and the nature of the experiments entirely forbid this; but they call these criminal actions, "laboratory crimes," and insist that they bear but little resemblance to actual ones. The arguments which they use to sustain this proposition, are, after all, somewhat obscure. It seems to me that there is in them a suggestion that they are afraid that adhesion to the propositions advanced by the Nancy school concerning them would unduly alarm the public. And yet, it is hard to say, so strange is the action of the human mind, conscious or unconscious, that the lingering knowledge that things are not what they seem to be, does *not* remain in the hypnotic subject, as the Parisian doctors urge.

Professor Baldwin who has recently visited La Salpetriere and Nancy, and written most interesting letters therefrom to the *New York Nation*, says that repeated experiments at Nancy have shown that a man to whom the suggestion has been made in a hypnotic state will stab a covered figure in bed, which has been represented to him as a living man, and which he believes to be so. The doctors at Nancy say if their confreres at Paris do not believe that this criminal suggestion would be equally efficacious, if the stuffed figure were a real man, let some one of them take the place of the stuffed figure. According to Prof. Baldwin, the Parisian doctors reply that until the jealousy of them by the Nancy school grows less, they must respectfully decline the experiment.

But, seriously, it is the *amount*, and not the reality of the danger concerning which the doctors disagree; and in the matter of lesser crimes, such as offenses against female virtue, smaller thefts, and particularly the bearing of false witness or perjury, it is admitted by all that the danger is very real. Especially is it urged by Dr. Berillon, the editor of the *Revue de l'Hypnotisme*, although a stanch member of the Paris school, that children, from their very great suggestibility can easily be made, in the hands of conspirators, the most dangerous of false witnesses. It could easily be seen too, how in such matters as testamentary wills the ends of justice and right may be defeated. Undue influence—a familiar term to our law, gains a new meaning in the light of what has been set forth.

And here I wish to make a digression for a moment. It may be that there are those here to whom hypnotism and the researches which have been made concerning it, by the ablest investigators, physiological and psychological, of the world, are not well known, and who look in a paper like this for some argument that hypnotism and its results as shown in the subjects experimented upon, are not simulation and imposture. I wish to say to them that I do not purpose to make any such argument, I have simply assumed it as indubitable; nor have I thought it at all necessary to cite cases, or advance proofs, of which the literature of the subject is full. In the present state of medical science, I should have no fear that any physician would here advance the contrary proposition. But I am not so sure of the lawyers, if their attention has never been called to the phenomena of which I have been speaking—for the law, I shall take occasion to say again in my paper, is not progressive, and lawyers are far from open-minded, as a rule, to the marvels of science. The fact is, that years ago the theory of simulation upon the part of the subjects of hypnotism was given up by all intelligent critics. All sorts of surgical operations have been performed where hypnotism has taken the place of anæsthetics. Muscular conditions absolutely impossible in the normal state have been induced in thousands of cases. Cures by suggestion at La Salpetriere and at Nancy, and indeed all over the world, have been made in myriads of cases. Indeed, the characteristic look of the hypnotic patient would, if the up-rolling of the eyeballs were simulated, imply nothing less than a world-wide conspiracy. But all bodily symptoms excluded, a complete proof would be afforded by the ever growing improbability that thousands of persons in hundreds of places, guiltless of theories, and unacquainted with each other, could build up by their several acts of conscious or unconscious deceit a large and consistent body of psychological results. To any person who doubts the reality of the phenomena which the various hypnotists of the world—many of them among its most famous and eminent physicians, agree are the concomitants of the hypnotic trance, I can only say that I advise him to make some acquaintance with the present literature of hypnotism, say in the proceedings and journals of the Society of Psychical Research, that wonderfully pains-taking and scientifically-minded body of which the Honorable Arthur Balfour is a leading member, and of which Professor James, of Harvard University, has written so enthusiastically in a late number of the *Forum*.

To return to the connection of hypnotism with medical jurisprudence, it is not only in connection with "laboratory crimes," such as I have spoken of, that in France the discussion of criminal suggestion has been waged. You, doubtless, all remember how, without success, the defense of criminal suggestion was made in the case of Gabrielle Bompard, the accomplice of Eyraud, in the terrible murder of Gouffe,—Professor Liegois still insists that there was grave injustice in that trial. However, that may be, the doctrine has not always been so unsuccessfully put forward. According to the system in use in France—much better arranged than here for determining the responsibility or irresponsibility of persons accused of crime, many cases of automatism, so-called, natural or suggested, have been referred to the properly authorized medical officers in charge of various departments of the Police of Paris and of France, and in several reported cases, their report having fully established to the satisfaction of the court the abnormal state of the prisoner when the offense was committed, he was discharged.

It is not strange that in a country in which hypnotism received its first scientific investigation, and where research and experimentation have gone to such lengths as they have in France, there should have been much more thought and said and written of its possible relations to legal rights and judicial proceedings, than in any other country in the world, And there is another reason, too, for this. It is undoubtedly true that a larger proportion of the mercurial and nervous and excitable French people is amenable to hypnotism and hypnotic influences, than of more phlegmatic races. And I must confess that up to the present time there does not seem, so far as the record of legal proceedings in England and America goes, much occasion for that alarm which has manifested itself among the ablest physicians and lawyers of France, in the matter of possible criminal suggestion. But it is impossible that to France alone and to French physicians alone the scientific inquiry into hypnotism will be long confined. Already in this country we have, not whole schools of physicians indeed, but individual (and very clever) men eagerly pursuing this line of inquiry. The knowledge of the possibilities which lie within the range of induced somnambulism will soon make rapid progress among the masses of the people, and it can hardly be expected that we shall enjoy, therefore, long in the future, an immunity such as now seems to exist from the dangers which have been so forcibly suggested in France. Nor is this a thing to be regretted or deprecated, for the knowledge which is to be gained is knowledge, after all, of the truth, which in the end can injure no one. If hypnotism can be used for bad purposes, it can and undoubtedly will be used much more for good ones. There is no powerful and beneficent drug which is not also a poison, with the power of destroying as truly as that of healing. And at all events, whether newly discovered truths are to be welcomed or deprecated, it is necessary to arrange one's life, and to organize society according to them when they are known. And it is but the part of cowardice to say that there are any truths which should not be known.

It will be long, however, I think, before we shall need to attend to any such extreme suggestion as that which has recently been put forward in France by no less an authority than Prof. Liegeois—called by him "moral vaccination." He has seriously proposed that to boards of competent practitioners commissioned by the Government—as in the case of vaccination in this country—all persons, and especially all children, should be brought. If they are found non-suggestible, well and good; but if they can be hypnotized and brought to a profound degree of "induced somnambulism," there should be made to them, in that state, a suggestion that thereafter *it* shall not be possible for any other person, by any other means, to hypnotize them. For precaution, it is proposed that this shall be renewed from year to year. For such a suggestion that the patient is not to succumb to the hypnotic influence of any other person than the one making to him, or her, this suggestion, has been found to be equally efficacious with any other.

I say that we need hardly anticipate that such a proposition as this will ever be made and considered seriously in our time and environment. But unless the law and its professors are prepared to be justly reproached with that want of adaptability to the changed conditions of life and states of human knowledge which has been too frequently their share in the past, it *will* be necessary, and that in the near future, to consider carefully the question of the responsibility or the irresponsibility of persons claiming to have been the subject of irresistible suggestion.

It is not in the abstract doctrines of our law that the difficulty will be found; it is in the present conditions of their application. We have seen that spontaneous somnambulism is a highly analogous state to the hypnotic trance; and as to spontaneous somnambulism, there is authority already in the law for saying that, as the somnambulist does not enjoy the free and rational exercise of his understanding, and is more or less unconscious of his outward relations, none of his acts during the paroxysms can rightfully be imputed to him as crimes. Courts would undoubtedly hold that, considering the abrogation of self-control peculiar to the physical condition of the somnambulist, no moral or legal responsibility could be attached to his actions. And indeed, so far as the law can be said to be formulated at all concerning the criminal responsibility of an insane person—as it was formulated, for example, by Sir James Stephen in his draft of a criminal code for Great Britain—there is found in it a rule which, properly applied, would meet the theoretical difficulties which might arise from the phenomena of hypnotism. An insane person, according to this formulation, is not to be held responsible for an act which he may commit when his mental disease prevents him either, *a*, from knowing the nature of the act done; or, *b*, from knowing that it is forbidden by law; or, *c*, from knowing that it is morally wrong; or, *d*, from controlling his own conduct.

In class (*d*) the hypnotic subject of criminal suggestion would fall. His mental state would prevent him from controlling his own conduct. But, it goes without saying that when a practical application of this rule was sought to be made there would be, under present conditions, and in the present state of the law in relation to expert testimony,—an absolute impossibility of determining to the satisfaction of the public at least, whether in any given case the accused was at the time of any criminal act in the condition named. We know now, how utterly absurd, nay, indeed, how indecent are the scenes in court when the question of responsibility, as depending upon mental condition, is to be decided by a jury. Experts, so-callled, who are the retained partisans of one side or other in the controversy, are brought in troops into court, where their testimony is thrown into hotch potch. There is hardly a proposition advanced by one so-called expert that another is not found to deny. The jury are absolutely without any valuable test by which they can determine the respective weight to be given to the different and conflicting witnesses. Those experts who are the most entitled to credit are generally the most modest, and reserved and cautious in their statements. They are, consequently, the favorite target for the insults and abuse of counsel.

Such a flagrant scandal has this come to be in our criminal insanity trials that there are no decent lawyers who do not now deplore the system which prevails. But for all that, they are very slow in suggesting change. It seems as if the spirit in which the English lawyers replied to would be law reformers from Rome 500 years ago—"Nolumus mutare leges Angliæ;" "We do not wish to change the laws of England" live yet in bench and bar. Averse to change as lawyers thus are, it would be useless under our system, by which the body of the law adapts itself slowly and painfully and in adjudicated cases only, to new conditions, to attempt to formulate new rules, or new theories of legal responsibilty, because of the new knowledge we have of hypnotism.

It will only be in contested cases that any departure from, or in addition to present formulas will have their origin. And we may be sure that it will be slowly and painfully *enough* that any such change will come about.

But, in the practical conduct of all trials which involve an inquiry into mental responsibility, it is not hopeless to look for a change in the immediate future. This change is one extremely needed, and it may be brought about. as I believe, by the vigorous effort of such societies as this. It is a reform which is needed, without reference to the new and perplexing problems which hypnotism may throw upon upon courts and juries, but it is one which the possibility of such problems serves to accentuate and emphasize.

It would only need, in one of our criminal courts, a war of experts upon a subject so little investigated and understood in this country as hypnotism, to cap the climax of the absurdity of such judicial farces as have already been enacted when mental alienation was the subject of discussion.

I propose then, and this is the only practical application to which I would bring my paper, that some such system as this in regard to expert testimony should be urged upon our law-makers. Let each state appoint an Examining Board of genuine experts upon mental and nervous diseases and abnormal states. Certainly, in communities like ours which support and officer asylums for the insane, it would not be difficult to make such a Board of competent and honorable men. Let one of the duties of that Board be to testify as experts upon any cases submitted to them, for which their compensation should come from the body politic. Let houses of detention be established, to which shall be committed before trial all persons for whom the plea of mental irresponsibility is urged. There let such persons be examined. Let them there also, should occasion seem to demand it, be thrown into the hypnotic state for examination. Let the examination be made more or less prolonged, according to the necessity of the case, as certified by the Board of Examiners. Then, after the examination is completed, let the *depositions* of these real experts be taken, away from the highly unscientific atmosphere of a criminal trial, but upon direct examination and cross examination. Let these depositions thereafter be used *before the court* to determine the question of responsibility.

By such a plan, it seems to me, we can make a great and urgently needed improvement in the administration of criminal justice, and not only remedy the abuses which now exist, but provide against their further development when into the practical domain of our court trials, and legal investigations, shall come the new and perplexing problems of hypnotism.

Discussion.

Dr. Sanger Brown:—I can only express the opinion I have formed upon the subject of hypnotism from what I have learned by reading and listening to those who have had experience of the phenomena. I have witnessed many attempts to hypnotize people, but none of them were successful.

Granting, however, that the asserted facts are true, it would seem to me to accord with the evidences of psychology to assume that to be a good hypnotic subject implies instability of the intellectual centers; that is, weak cerebral tissues. For instance, when we are willing to trust a member of our community with money, we express our confidence in the high quality of his cerebral tissues; various areas in his cerebral cortex have received certain impressions, and these have become firmly correlated in a manner which will surely prompt him to act in conformity with the principles of honesty. In this way the various elements of character may be traced out.

Now, it is generally conceded that during childhood and youth these impressions and the correlating connections between them have not yet become quite established, because the tissues have not yet fully developed, and allowances are made by courts of law in such cases. It is also generally conceded that among adults instability of the cerebral centers is much more common in women than in men.

When we wish to induce a person to pursue a certain line of action we attack his cerebral centers, and just in proportion to the vigor of our attack and the stability of the centers will we succeed. We may even dose him with alcohol to temporarily reduce his resistance.

Now, it is well known that by far the largest proportion of the population who are thus open to influence, persuasion or suggestion is found among the women and children, and it is asserted that from this same class comes the hypnotic subject. Without discussing in this place the fine points of difference between what is commonly designated persuasive influence and the phenomena of hypnotism, I wish to assert that in their medico-legal relations they are, in my opinion, very nearly alike, both having an operator and a passive subject; the passivity of the subject depending upon the deficiency of his cerebral tissues in both instances, and the law needs to make no special provision for one more than the other.

There is practically no probability that a normal adult can be hypnotized unless he wants to be, and this being the case, I do not think that hypnotism should be accepted by the courts as an excuse for crime.

Judge Richard S. Tuthill:—This is my first evening with this Society, but I intend that it shall not be my last, because I find here an opportunity for instruction that it seems to me should be improved by members of my profession, and more especially by those occupying as I do at the present time a judicial position. These questions are not only interesting but they are of intense practical utility, and I think it is the duty of the lawyer and the judge, as well as of the medical man, to study and endeavor to master so far as he can the more practical questions such as have been disdussed to-night.

I would like to say a few words on the subject of expert testimony, to which Mr. Brown referred, and his suggestions as to a remedy for the abuses which prevail in expert testimony in sane and insane cases in our courts, and the legal and moral responsibility of persons charged with crime. I had one quite noted case in which medical men of eminence came on the witness stand and gave very diverse testimony. I allude to the trial of Mrs. Rawson for the attempt made by her upon the life of the lawyer of her husband. I don,t think there was very much difference of opinion among the medical men who testified as to the real condition of the person charged with the crime, but there was a disposition on the part of the jury, which is very often found, to seize at any kind of a chance to reach an acquittal, she being an interesting woman and having suffered what seemed to the ordinary observer many wrongs and hardships. I do not see how it is possible to adopt the suggestion made by Mr. Brown and have certain witnesses furnished by the State, and say that others shall not testify. Such a thing, it seems to me, would be impracticable if not undesirable. But I think a society of this sort can do a great deal in getting up a proper *esprit du corps* in the medical and legal profession, so that there shall be a desire on the part of every medical man who goes on the stand to have mastered his subject so that he can speak with an authority that will be recognized, because when there is knowledge and certainty of opinion, I have observed that influence goes with it.

The case of John Redmond, who murdered Dr. Wilder, was tried before me. There was not very much difference of opinion among the medical gentlemen who testified; some said he was insane and the others did not disagree with them, they said that at times he was insane, that is his mind was disordered. There the law comes in and says to what extent this disorder should go to make a man legally and morally unaccountable. It is not every disordered intellect that is acquitted of crime in the law. I think the rule of the law is just, fair and intelligent; it is not every man who is not sane that is to be acquitted and turned at large on the community; it is only where insanity has gone to such an extent that it sweeps away his reason and understanding and he has no more control over himself than a mad dog that he is to be held unaccountable. When Dr. Dewey, who had had charge of John Redmond, came on the stand without fee, which fact I took pains to have brought out before the jury, I had every confidence in his character and intention to tell the truth. I asked him whether he believed that John Redmond at the time he fired the shot which killed Dr. Wilder knew that he was doing a legal and moral wrong, and he said that he did. And the law held him responsible; the jury held him guilty of murder and fixed his penalty at imprisonment in the penitentiary for life. I believe if the gentlemen of the medical profession who are called upon to testify upon this subject would draw that distinction and would insist that although a man may have a disordered intellect, although he may be erratic and have illusions to a certain extent, yet if he knows the difference between moral and legal right and wrong he should be held responsible, there would be fewer of these scandals in the courts, of which Mr. Brown speaks.

Mr. E. O. Brown:—The statement of the Judge rather surprises me that in all civilized countries the condition of things prevails which prevails here. But it does seem to me that the system which prevails in continental countries is worthy of consideration because of the effects it brings about in the examination of mental alienation. My idea, which I tried to express in my paper, is not to limit simply expert testimony, but to have certain experts picked out for the purpose who should be impartial, and that would necessarily limit them. We should not have a system which makes the expert witnesses who are testifying upon matters of scientific investigation, partizans of one side or the other of the controversy. That is the essential part of the proposition which I made. It seems to me it is possible to disjoin the investigation of a question of fact or occurence from the investigation of the mental condition of any given person. As to the rule which the Judge lays down about insanity, it strikes me that he is a little inconsistent; if the question is only whether a man knows whether his action is right or wrong, then the other test which he suggested of an uncontrollable impulse, must be excluded because insane persons do know that a thing is wrong sometimes when they are unable to control their conduct and not do the thing. The Judges in England stated to the House of Lords, in the McNaughton case, that the true test was whether the criminal knew the difference between right and wrong. But that has since been much departed from here and in England, and everywhere because the question is, sometimes, whether knowing a thing to be wrong the person committing the crime could control his own action.

Dr. Archibald Church:—During the past three years, practically without any definite intention on my part, I have had more or less to do with this subject of hypotism and have in a rather desultory way experimented with it at not infrequent intervals. I would say that the proportion of people hypnotizable is less than that laid down by the essayist of the evening upon the statement of European authorities. I have been unable to hypnotize as many as 4 per cent. although I have tried to select my cases with more or less care, picking out those whom I thought might be fit subjects, and not wasting my time upon those who would resist it from natural causes or inclination. That hypnotism is possible goes without argument; that crimes may be due to hypnotism I think is in all probability equally a fact. Dr. Bernheim, who has been quoted this eveding, on one occasion in Paris went into the various hospital wards where he selected hypnotizable subjects and made suggestions after this order: he would tell them that on a certain occasion at a certain place and certain hour they saw a crime committed and he would detail the incidents of the crime and also tell them they would be called before a magistrate and asked to testify. In the next ward he would give the same suggestions from a little different standpoint, and in that way hypnotized several witnesses, being careful not to tell any one of them exactly the same story, so that the appearance of collusion would be eliminated. The next day these men were brought before a judge and each told the story suggested to him with all the circumstantial details necessary, had the facts justified it, to produce a conviction. In other instances insignificant crimes have been committed upon hypnotic suggestions, and that a serious crime might be committed I think must be admitted. But it is to be kept in mind that extremely few subjects are so hypnotizable that a deliberate crime after a considerable lapse of time could be carried out by them even if it had been suggested.

If it were not another story, I would like to take up this question of legal and moral responsibility and the right and wrong test which has been laid down in the McNaughton case and has been servilely followed by the legal profession ever since.

I wish in closing to call your attention to some resolutions adopted in 1876 by this Society, strongly advising against all public demonstrations of hypnotism.

Dr. D. T. Nelson:—I am interested in this subject but I confess I don't know anything about it and I am very much of the opinion that those who know most about it know very little. I am very much obliged to the essayist for giving us so much of his research, experience and suggestion.

Dr. E. J. Doering:—Some ten years ago I felt a good deal like Dr. Sanger Brown about hypnotism. You will recollect that a member of the Chicago Medical Society made some interesting experiments before the Society on half a dozen subjects. A little later I was one of a committee to investigate the subject and it was found that they were all so-called "horses." But after witnessing some extraordinary experiments last year in Charcot's clinic at Paris, I am very much interested in the subject as illustrated in the admirable paper presented by Mr. Brown to-night.

I also want to say a word about expert testimony. I most cordially agree with Mr. Brown, and I think physicians as a rule, outside of those who are particularly interested in expert fees, feel very much as Mr. Brown does, that, wholly independent of the fee, the ends of justice would be more quickly served.

Dr. Samuel J. Jones:—I am too unfamiliar with the subject to express any opinion in regard to hypnotism, and I can only say as far as expert testimony is concerned, that it is a matter which appeals to all in the medical profession as well as in the legal profession. I feel that we cannot advocate that question too much until we obtain a point more definite, more satisfactory, approaching more nearly to justice both to those concerning whom testimony is given, and those who are called upon to testify.

Dr. D. R. Brower:—I have made, in the last eight or ten years at Chicago and elsewhere, a good many attempts at producing this hypnotic state that the essayist has so admirably described, and I am free to confess that I am not an expert in the hypnotic art. I have found an exceedingly small proportion of people who could be brought into this condition, and this proportion among native born exceedingly small. The only really good subjects I have ever succeeded in finding were among the French, and not our Canadian French, but French from France, and they have been almost always females. There is something peculiar about the construction of the nervous system of a Frenchwoman that makes her to a very much larger degree susceptible to this influence that I have never found among our own people; indeed, I have rarely, if ever, succeeded in producing the hypnotic state in a native American unless it happened to be a child of twelve or fourteen years of age and then I had very great doubts as to the genuineness of the performance, so I don't believe there is any such cause of alarm as would seem to be indicated by the paper. I think the proportion of negroes who are susceptible to this hypnotic influence is very large, greater even than the French, and it may be that there is danger of suggesting crimes to them. Where a person is susceptible to hypnotic influence, I believe it is possible to make suggestions to them of a criminal character; and I am well aware of another fact, that if you have once succeeded in inducing this hypnotic condition it is an easy matter to repeat it, and the more frequently it is repeated the easier it is. So I think that while the French may have reason to be alarmed, so far as we are concerned in this country there is not much cause for fear.

Upon the question of expert testimony, I quite agree with the essayist, I think we have some of the most disagreeable presentations of questions at courts that can be imagined. Just what the remedy is I don't know, it may not be in the direction he has suggested, but certain it is that our methods of expert testimony, so-called, are a disgrace to the medical profession. I am free to confess that I differ most emphatically from the definition of responsibility that my distinguished and personal friend, Judge Tuthill, has given us. I think there must be something more, something very much more, than the mere knowledge of right and wrong to establish this question of responsibility. The insane man may know perfectly well the difference between right and wrong and yet commit a criminal act and not in my judgment, be responsible for it. The narrow limits of responsibility that were set up in the McNaughten case will not apply. In scientific psychiatry there must be the power to do what is right as well as the power to know what is right, there must be power as well as knowledge.

Judge Richard S. Tuthill:—I do not think I disagree with the chairman very much in his idea; I think that people are insane who really know the difference between what is legal right and legal wrong, but I think such people should be restrained and that they should be held accountable for their actions, not on their own account, but on account of the community.

Mr. E. O. Brown, in closing the discussion, said: I don't know that Judge Tuthill and I disagree so much if we could only eliminate the unnecessary part of what each of us has said. I thoroughly agree with him that it is not every man who is in an abnormal state of mind that should be acquitted of crime if he be put upon trial for that crime, and the crime is proven to have been committed by him. It does not seem to me that the mere fact that his mind is disordered should be sufficient to acquit him. But the trouble in Judge Tuthill's argument is in limiting the state of mind which should acquit him or which should prevent his being stigmatized as a criminal, to his knowledge of whether the act was right or wrong; now I doubt whether that is true. The deliberate opinion of the very high authority in English law in the McNaughton case was that that was the test, and that alone; but I do not think it is presumptuous to say that that rule has never given satisfaction to the lawyers or the bench either in England or America, and has been thrown aside—not absolutely denied, but not followed, and treated with very much less consideration than one would suppose a rule enunciated by such high authority would be in a profession that follows precedents so closely as does the law. Most of the acquittals—and I think Judge Tuthill will agree to this—of persons in this country and England, upon the ground of insanity, have been where the real question was that of uncontrollable impulse, or impossibility to control the conduct, rather than the want of knowledge of right and wrong.

As to the matter of hypnotism, I was very much pleased to hear what has been said about it by the physicians, and I should have liked very much to have heard something more about Charcot's clinic, because it has always seemed to me that these experiments conducted in Paris under Charcot's immediate supervision, have been the most convincing of any of the phenomena that hypnotism has presented. I quite agree with our presiding officer that the danger of criminal suggestion is not so great here as it is in France, but it does seem to me that with the extension of knowledge among all classes of people as to the possibilities of hypnotism, and the fact that we have among us a population not Anglo-Saxon but largely Celtic, and that we have a negro population which is very amenable to such influences, and that children of all races are peculiarly susceptible, makes it necessary, not that we should become panic stricken about it, not that we should take any extreme measures, but that we should look carefully at the rules and practices which prevail in our courts, in order that we may reform those things which are present abuses, and which will be abuses of more importance and of more far-reaching bad results if these problems of hypnotism are to be thrown upon the courts. That is the connection which I made between this matter of expert testimony and the main subject of the paper. It seems to me that we do not now have to propose any practical measures to ward off the dangers of hypnotism, but to consider that there are new questions of responsibility to add to the perplexities which the courts already suffer from in the matter of alienation; that we ought to be looking about to see whether the rules and practices which now prevail are according to right and reason, or whether they can be improved upon; and I must say that the medical profession ought to take very advanced and energetic action in this matter, because—with regret I say it—the lawyers never will.

SECTION ON PHYSIOLOGY AND DIETETICS.

RECORD OF MINUTES.

TUESDAY, JUNE 7.

The Section met at 3 P.M., Dr. Kleinschmidt in the chair. On motion the Section adjourned to meet on June 8, at 3 P.M.

WEDNESDAY, JUNE 8.

Section called to order 3:30 P.M. Records read and accepted.

The Chairman then delivered his address on "Physiology," culling from publications in many languages the progress made during the year. which was very remarkable and of intense interest, for the contributions shed new light on functions and some of them,—especially as to the cerebellum were revolutionary in medicine.

The thanks of the Section were voted to the chairman for his unusually able and timely resumé.

Papers also were read as follows: On the Navy Ration by Assist. Surgeon C. A. Siegfried U. S. N; on the Marine Ration by Dr. G. W. Stoner, Marine-Hospital Service, and on The Army Ration by Assist. Surgeon C. E. Woodruff, U. S. A. The thanks of the Section were accorded to these gentlemen through the Secretary.

The time consumed was about three hours and then the Section adjourned to 9 A.M., June 9.

THURSDAY, JUNE 9.

Met at 9 A.M. Discussion of the Army, Navy and Marine Rations.

The Secretary said that he was in favor of testing foods singly fed with water, tea or coffee as drinks, flavored or not with lemon juice,—under military or naval discipline, in order to get at the best foods for the service. Assist. Surgeon Seigfried said that nothing could be done with soldiers or sailors outside of the rations more than with civilians unless they volunteered and were paid extra for it.

The Secretary thought that a wheat sausage would be far better than the famous "peasaussage" of the German Army, a sample of which had been submitted to the Section by Assist. Surgeon Woodruff, as well as another sample of American make which was deemed inferior. The reason is that men can live on wheat alone with the above drinks for 45 days, it is said, and suffer none in health, while on peas the time was only ten to 15 days. He asked if the government would consider the use of such a wheat sausage if submitted. Dr. Siegfried replied he thought not, and that nothing could be done over and beyond the regular list of foods. This was a singular statement since the government is all the time experimenting with new armaments, and good foods are the best armaments.

The Chairman then said that he thought the present rations were perfect, and that "peasausage" was merely to tide over sudden emergencies when the armies were to be cut off from their base of supplies. The Secretary replied that so far as he could learn, the cause of camp diseases was not the bad air (malaria) but food, such as hard tack, for example. The evidence to support this view was a series of experiments made by another, in feeding men exclusively on hard tack, coffee and water alone—which experiments showed that in ten days, at least, camp diarrhœa was caused in all the cases with varying severity. Now the way to upset this was the very simple one of repeating the experiments, and it seemed to the Secretary that if the laws prevented military or naval tests in this direction, the laws should be changed to allow it. We want healthy soldiers and sailors. The standard of health is found in the morphologies of the blood, sputum (if any), urine and feces of a healthy infant nursing a healthy mother's breast. This standard the Secretary got in adults by diet. So in the proposed military or naval experiments these morphologies should be recorded and the results estimated from them.

The Secretary said that he thought that a diet of ⅔ animal and ⅓ vegetable would be the best army ration, from the fact that all puerperal women thus fed thrived and had a plenty of breast milk. The main facts of this idea are brought out in a book, "*Food in Motherhood*" published by David Stott, London, Eng., to which reference was respectfully made as showing the honest intentions of the writer.

Dr. Siegfried said that such experiments only could be made outside in schools or universities. The Secretary thinks the subject so important that the Government should authorize the military and naval staffs to form such schools.

The Secretary wished to thank the government officials, *i.e.*, Surgeon-General Sutherland, of the Army, Surgeon-General Browne, of the Navy, and Surgeon-General Wyman, of the Marine-Hospital, for their kind responses to the Secretary, and who authorized the authors to present the above papers, because they are mirrors of the present state of the rations in their respective services, and hence of great value as history. The business of this Section is simply to mirror or photograph the American dietetic knowledge of 1892.

The election of the Executive Committee on Sections was then had as follows: For three years, Dr. Kleinschmidt; for two years, Assist. Surgeon Siegfried; for one year, Dr. Hazard, of Alleghany, Pa.

The Paddock Pure Food and Drug Bill, was then brought up. The Secretary said that his interest in the bill came because for years these foods had been studied, and that in spite of all efforts fraudulent foods were made, sold and endorsed, and would continue to be, but for such a law. To be particular he instanced as a type of this class the Imperial Granum which the Conn. Agricultural Experiment Station had examined and found to be common flour, thus confirming the statement of the writer in 1882. This class fight the Paddock Bill. On the other hand such companies as the Squibb and the Doliber Goodale, for example, types of manufacturing pure preparations, welcomed the Bill and wanted it passed.

The following was then unanimously passed:

The Section of Physiology and Dietetics of the American Medical Association 1892, having duly discussed and considered The Paddock Food Bill now before Congress

Resolved, That the same is here endorsed and that they strenuously urge its passage as a most important step in the direction of the health and welfare of the Nation.

Resolved, That this action be submitted to the consideration of the American Medical Association for its endorsement.

On motion it was further

Resolved, That this Section has no objection to excepting in the Paddock Food Bill, Drugs used for industrial purposes.

Professor Herrick of Cleveland, withdrew his paper in order to read it in another Section.

The following papers were read by title and refered to the "Physiology of the Epithelia" by E. Cutter.

"Diet in its relation to the Treatment and Prevention of Diseases," by Dr. A. P. Clarke.

"Food and Hygiene of Old Age," by Dr. J. M. French.

"Medical Food Ethics, Now and to Come," by E. Cutter.

By vote the Secretary was instructed to send the resolution on the Food and Drug Bill to the Section of Materia and Pharmacy, but they had adjourned.

Ephraim Cutter, Sec'y.

Lithium Salts in the Treatment of Rheumatisms.—Practical therapeutists have for many years recognized the great value of the soluble salts of lithium, especially the carbonate and, more recently, the benzoate, in the treatment of all forms of rheumatism. Of late, however, a certain school of observers seem to have arisen abroad, who after a few laboratory experiments, which they do not describe in detail, would have us believe that all our practical experience goes for naught, and boldly declare that the idea that the lithium salts have any curative or beneficial effects in rheumatism is a superstition based on tradition, "authority" and inaccurate observations. A book has recently appeared in England (and we believe has been republished in this country), which has for its object the demolition of the "lithium salts idea." It is by a Mr. Haig, some of whose experiments are very queer to say the least. Meanwhile practical physicians will require a vast deal of theoretic biological chemistry to convince them of the worthlessness of lithium salts in gout and rheumatism. It is pleasant in this condition of things to find the following extract from a communication to *l'Union Pharmaceutique*, from so competent an observer as M. P. Adoue, pharmacist of the first class at Pauillac, in favor of lithium benzoate: M. X., who was suffering with gouty rheumatism, and had not yet tried the salts of lithium, asked me to make an analysis of his urine. I did so, and found 22 gm., 50 cgm. of urea, and 73 cgm. of uric acid to the liter. Microscopic examination revealed no hippuric acid crystals whatever. A few days later, under the advice of physicians, he commenced the use of lithium benzoate in pills, and in effervescing waters. A month later I examined his urine again, and found hippuric acid in considerable quantity; in fact, in great masses, resembling the ammonia-magnesian phosphate. The analysis showed the presence of 13 gm., 80 cgm. of urea, 95 mgm. uric acid, and 21 cgm. hippuric acid to the liter. The patient was much improved in every way and continued the use of the remedy with excellent results.—*National Druggist.*

Treatment of Ringworm.—Crawford Warren, F.R.C.S.I., in the *London Lancet*, suggests the following treatment for this troublesome affection: The affected region should first be washed with soap and warm water containing a little carbonate of soda, and then well dried. Acetic acid should then be thoroughly applied with a small brush, and on the lapse of about five minutes, when the acid will have soaked into the part, an ointment composed of sixty grains of chrysophanic acid to an ounce of lanolin should be rubbed in. This treatment should be carried out daily for such a period as may be necessary.—*Western Medical Reporter.*

Artificial Camphor.—The methods hitherto employed for the artificial production of camphor, based upon the oxidation of turpentine and analogous substances, have been found to be unprofitable on account of their cost. Nordheim claims to have discovered that the oxidizing process can be carried on at the least expense by the application of ozone or of ozonized air, for which he has obtained a patent in Germany. Chlorine gas is conducted through terebentene distilled from crude turpentine, and the resulting chlorine combination is purified from its liquid isomers in the ordinary way. It is then decomposed by an alkaline carbonate and heated to 120° C. The vaporized camphene thus produced is exposed to ozone or ozonized air to make camphor, which may be pressed in moulds, melted, or sublimed as usual.—*Druggists' Circular.*

According to Dr. H. A. Kelley, permanganate of potassium and oxalic acid are harmless to the hands and are germicidal. Soap and water plus the permanganate of potassium and oxalic acid are true germicides and the best of disinfectants

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SATURDAY, NOVEMBER 12, 1892.

IODIDE OF POTASSIUM IN BOVINE ACTINOMYCOSIS.

While the number of cases of human actinomycosis recorded in medical literature is still quite small, the total being in all likelihood about 300, yet it is of much interest to the scientific physician to learn of the great advances that veterinarians are making in the treatment of this otherwise intractable and fatal disease among cattle, especially because the success that has been met with would seem to warrant the expectation that the simple treatment might prove equally efficacious in human as it has done in bovine actinomycosis.

It will be remembered that actinomycosis is an infective granulomatous process depending upon the presence in the tissue of the actino-cladothrix, which consists of radiating filaments; this bacterium was formerly classed as a mould fungus and was called actinomycis, and the disease was named actinomycosis. The researches and experimental studies of AFANASSIEW and SCHULTZ, ISRAEL, BOSTROEM and MCFADYSAN have shown that the organism belongs to the highest classes of bacteria, the cladothrix, and it should be named the actino-cladothrix on account of the star-shaped arrangement of the radiating filaments. This organism has been cultivated artificially, and successfully inoculated by many investigators, among them I. and O. ISRAEL, BOSTROEM and MAX WULFF. It will be seen that much progress has been made in our knowledge of the actino-cladothrix since BALLINGER's first description of actinomycosis in cattle in 1877, and since PORFICK demonstrated the identity of human and bovine actinomycosis in 1879, although JAMES ISRAEL had described two cases of the disease in man in 1877, but without recognition of their identity with BALLINGER's disease in cattle.

The surgical treatment of human actinomycosis is, as a rule, successful when the measures employed are vigorous and thorough, removing every particle of infected granulation tissue; but in many instances the disease has progressed too far and is beyond surgical aid when the patient comes under observation, or the primary disease may be located in regions inaccessible to the surgeon for the purpose of radical removal, as in the lungs, the intestines, and the brain. HODERPYL had in 1890 found the records of thirty cases of human pulmonary actinomycosis, in nearly all of which it is safe to say that surgical measures were out of question; in eighteen of these cases the diagnosis was positively made during life by the detection of the actino-cladothrix in the sputum. Generally speaking the diagnosis of actinomycosis is easy, because the presence of sulphur-colored granules recognizable with the naked eye in the pus from acticomycotic foci will place the thoughtful physician upon his guard, and the bacteria are readily detected when the pus is examined with the microscope.

A few years ago M. THOMASSEN, of the Utrecht Veterinary School, called the attention of veterinarians to the value of the internal administration of iodide of potassium in every form of bovine actinomycosis. He pronounced it an infallible remedy. PROF. BAUG, of the Royal Veterinary College at Copenhagen, Denmark, employed the drug with the same gratifying results. Recently NOCARD, in Paris, described the disease, and cited many cases that showed conclusively that iodide of potassium radically cures actinomycotic foci in cattle that were previously deemed hopeless instances of the disease. At the instance of DR. V. NORGAARD, a Danish veterinary surgeon employed in the U. S. meat inspection Service, the Department of Agriculture at Washington is now carring on a series of experiments with iodide of potassium in bovine actinomycosis. These experiments are carried on at the Union Stock Yards in Chicago, and are watched with great interest by veterinarians, cattlemen, and farmers generally. The price of the iodide has gone up on account of the increased consumption. The same successful results appear to be as uniform and certain here as the reports of THOMASSEN, BAUG and NOCARD would lead us to expect. It will be extremely interesting to note the effects of the iodide in human actinomycosis.

And it is to be hoped that reliable men will soon have opportunity to try the drug in suitable cases. There is a possibility that the frequent secondary infection with pus microbes in actinomycotic foci in man may interfere seriously with the curative action of the potassic iodide, but a few observations would soon establish a number of facts in regard to this medicinal treatment the success of which in bovine actinomycosis appears to be so permanent that its use is certainly warranted in human forms of the disease, many of which for various reasons are not amenable to surgical treatment.

PREVENTIVE MEDICINE AND STATISTICS OF DISEASE IN VERMONT.

At the late annual meeting of the Vermont State Medical Society, the president, Dr. CAVERLY of Rutland in his address gave some very interesting facts on the above topic. Back in 1815, DR. GALLUP of Woodstock, wrote a small volume "On Epidemic Diseases in the State of Vermont." This was among the first works on infectious diseases published in this country and has both a local and historical value.

In 1857, the State began a system of gathering vital statistics, through the school district clerks, which are tabulated by the Secretary of the State. From these records some very interesting facts concerning the prevalence and mortality of diseases have been gathered. Consumption seems to lead all other diseases, and yet in a period of thirty-two years the deaths have ranged from 650 to 850 yearly. These deaths have been largely young men and women between 20 and 30 years of age, and the history of the disease in families and neighborhoods suggests a degree of infectiousness that has not been recognized. Typhoid fever has been fatal in from 100 to 550 cases a year, but has notably declined in the past few years. A knowlodge of the causes and improvement in the dwellings and drainage has made this change. As in consumption nearly sixty per cent, of the fatal cases have been young people below 30 years of age. Diphtheria has varied most widely in mortality, and is most prevalent in winter. Over two-thirds of all the deaths were under ten years of age. The eastern counties of the State have had more deaths, for the reason they were more thickly settled.

The same history of contagion is apparent here, and the fact that diphtheria is a disease particularly of the farm and country is equally clear. Numerous hints appear of the scattering of the germs by walking cases, or persons who have it so lightly as to be unsuspected, and who go about complaining of a sore throat only. The doctor makes a strong plea, to consider all doubtful cases suspicious and treat them by thorough isolation and disinfection until all possible danger is over. Diphtheria is increasing, and the doctor urges that the legislature give the health boards more power of control. That persons suffering from this malady should not be permitted to go away from home without the consent of the health authorities; that this board should have the same power as in cases of small pox, to both quarantine and disinfect all surroundings. The doctor calls attention to the preventable cases from these three diseases alone, viz.: consumption, typhoid fever and diphtheria, and remarks: "The precautions that have banished small pox from the State; that have made deaths from measles and scarlatina rare, should if well understood by the public and acted upon by the profession, greatly reduce the prevalence and mortality of typhoid, diphtheria and consumption, and hasten on the time when these diseases should be wiped out of existence."

Over two thousand deaths occur yearly by these diseases, nearly altogether of persons under 40 years of age, and this in one of the most healthful mountain States of the Union.

This address closes with an appeal to the profession to become fully acquainted with the facts of contagion and prevention, and teach the people in every neighborhood the necessity of studying and obeying sanitary laws. Along this line the highest triumphs of medicine will be attained. It is evident that such topics are inexhaustible at present, and are of exceeding interest to the profession everywhere. The statistics of such mountain States where the population is subject to but little change, and where the family physician spends a long life time in one community are far more accurate than those gathered elsewhere. Addresses and papers on these subjects have more than local interest. They are contributions that are of intense practical interest. If physicians would gather up such facts in their own neighborhoods, and point out the conditions which favor or antagonize diseases, more substantial gains would be made for science than guess work statements of the effects of remedies. The country and village physician most of all others instruct us on medical climatology and preventable medicine. for they are in a better position to do this than others. DR. CAVERLY's address should turn renewed attention to this most vital of all topics. Infectious diseases and their prevention.

RELATIONS OF PUERPERAL INSANITY TO PERVERSIONS OF OFFSPRING.

An editorial article in the *Maryland Medical Journal*, October 15, summarizes some recent publications regarding the sensational Memphis murder trial. It refers to some allegations or facts that have not hitherto been prominently mentioned. Among other statements, is one of no slight importance, to the effect that the mother of ALICE MITCHELL, the person accused of murder, was the subject of puerperal mania at the time of the birth of her eldest child, and was sent to an asylum on that account. ALICE MITCHELL's trial resulted in a verdict of unsound mind—supposed to be temporarily insane through a perverted sexual jealousy. She was committed to the Bolivar Insane Asylum. A later publication states that letters, written by the medical superintendent of that asylum, describe ALICE MITCHELL as free from all symptoms of insanity. She may, therefore, presently be released from that institution, and when that has taken place it is supposed that her arrest for murder will speedily follow.

Medically considered the point of principal interest is deemed by the writer of the article above mentioned to be is not so much the scum and filth that come to the surface when sexual perversion is the theme, but rather for the practitioner to be ready with his advice when the victims of this inherited taint or vice, as the case may be, are met with in practice. How far the parent suffering from puerperal alienation can impart to her child any tendency to perversion has not very frequently been the subject of record, but it will not be surprising if it shall be found that a certain causative relation exists. From a medical point of view, also, it is important that the profession should bear in mind that these perverts may be dangerous and violent. It is well to warn the relatives of such to be on their guard not only against sudden outbursts of passion, but also against coolly premeditated deeds of violence.

PAN-AMERICAN MEDICAL CONGRESS.

In our last issue we acknowledged the receipt of the preliminary announcement of the Congress, which forms a handsome pamphlet of 102 pages.

We note that the preliminary organization of this vast and important undertaking is commensurate with the objects in view. A satisfactory and suprising degree of forwardness is shown in the work, and there now remains the detailed preparation in the organization of the different Sections.

A series of general regulations have been adopted that shall be applicable to future Congresses, and a number of special regulations for the government of the Congress to be held next September in Washington, D. C. The registration fee has been fixed at $10 for residents of the United States. The official languages of the Congress are Spanish, French, Portugese and English. All papers are required to be printed in abstract not later that July 10, 1893, each abstract not to exceed 600 words. Papers and dissions are to be printed in the language in which they are delivered. Papers are limited to twenty minutes, longer ones are to be read in abstract, but may be printed in full in the transactions.

Dr. Reed informs us in his report that an organization to some extent has been effected in each country with the exception of Paraguay. In many instances it is complete, in others partial, but in any event it is sufficient to furnish channels through which the necessary preliminary work of the Sections may be inaugurated.

The splendid preliminary organization gives every promise of a useful and important Congress. The President of the United States has invited the constituent countries to send delegates. The American Medical Association initiated the movement leading to the organization, every member of the profession in the United States is interested in the success of the undertaking that has been so ably inaugurated.

We trust that every member of the Association will join heartily in the movement. Funds are especially needed at this time, as the expense of the preliminary organization has necessarily been considerable. It will materially aid in the work if registration fees are forwarded in advance. This may be done by a direct remittance to Dr. A. M. Owen, treasurer, Evansville, Indiana.

TUBERCULAR OSTEOMYELITIS OF THE FEMUR.

As Max Schueller has shown, there is a characteristic opposition in the manner in which the bacteria of suppuration and of tuberculosis localize and invade the tissue of a long bone. Preferably pus microbes find a footing in the medullary substance of the bone, contrasting with the so often seen tubercular epiphyseal foci. Anatomically suppuration extends throughout the shaft, as a suppurative medullitis, only at times is a bone abscess observed. Tuberculosis, in the great majority of cases, remains fixed at one or more points, forming foci of tubercular osteitis. Only in the small long bones, as in spina ventosa, does tuberculosis extend throughout the bone. The beautiful experiments of W. Mueller, although presented some time ago (1887), that were performed upon sheep and goats with a view of showing the results of injecting tubercular detritus into the *nutrient arteries* of the long bones, prove, beyond doubt, that here a diffuse tubercular inflammation is not the rule. In a series of twenty reported experiments, not once did this condition result. Still, during operations upon the large bones or upon the neighboring joints, and at times while making post-mortems in cases of miliary tuberculosis, medullary cavities are opened and accidentally found to be filled with tubercular granulations. Such a case once came to the notice of the writer. A boy, who had already recovered from an excision of a tubercular hip joint, was being operated upon for a supposed focus that remained and gave rise to the existing symptoms; as the greater trochanter was being chipped away, the osteoporosis was found to extend until at length the medulla was reached, which was full of gray granulations and detritis. Some time later the femur was canalized and finally extensive suppuration and necrosis required an amputation.

It is indeed fortunate for conservative surgery and mankind that tubercular osteomyelitis is so infrequent, as the usual end is in an amputation, or death of the patient. (Koenig). As the tuberculosis has most often advanced from an articular extremity, this, besides the medullary cavity and its walls, is also extensively diseased. Demme has described such a case, that truly deserved the name *malignant* *tubercular osteomyelitis*, as practically the entire femur was involved. In such a case, nothing but the most radical treatment can give any possibility of recovery. In the case observed the mistake was made that the entire length of the medullary cavity was not opened at once. But here, as is so often the case, the extent of the disease was not presupposed, and no preparation for so severe an operation was made. The possibility of extension to the medulla should never be overlooked, especially in operations upon tubercular joints of long standing. The delay may have caused the loss of the limb, although it is hard to place the possibility of having saved it, even had the operation been performed at once. In general, the indications and methods of treatment are closely analogous to those of suppurative medullitis and must certainly be as fully and promptly executed. As so many cases result in amputation eventually, Koenig has given primary amputation a rational position in the treatment of tubercular osteomyelitis. It should be done whenever the bone is very extensively involved, where there is tuberculosis of other large joints or when the patient is suffering from phthisis, diabetes or nephritis. Adding a final reconsideration, it must be recalled that the condition provokes but slight symptoms and on this account may quite escape notice until accidentally discovered.

HONESTY IN EXPERIMENTAL RESEARCH.

The readiness with which the results of experimental research are received by the scientific public depends largely upon the reputation and known veracity of the investigator. From some men the most remarkable announcement will at once be received without question, the acceptation of their statements being based upon the previously formed opinion of other workers, who, having repeated former experiments, find them to be correct. Upon the other hand results from certain other investigators would immediately receive criticism. The spirit of dishonesty may make itself felt in two ways, upon the side of experiment, and upon the side of the result obtained. There are those who propose certain problems to themselves, proceed to arrange experiments and then make them conform to the end they have in view. Sometimes this proof may be correct, but again, upon approaching the subject from another direction, very apparent differences may be shown. Results evidence dishonesty when they do not conform to the experiments, or are willfully misstated. This last is indeed the greater evil, because, when the data advanced are disproved, a controversy as to personal truthfulness may arise. Debate should always rule the discourse of science, and not controversy.

The cause of this occasional dishonesty may be sought for in a desire to obtain notoriety, or in a frequent wish to make gain out of failures. The honest worker is he who never hurries, accepts noth- as settled, and who does not grasp at his conclusions. Sometimes in practice a "snap" diagnosis will pass without comment, but a statement without deduction in experimentation is truly degrading. It is better to conduct experiments without object and let the results develop, and then balance each synthetically, than to make end meet end, and the amount of work conform to the ambition.

EDITORIAL NOTES.

"Dr." Conan Doyle, the Modern Scott.—The author of "The White Company," a late work of laborious historic fiction, was for eight years a medical practitioner. He possessed a degree of the University of Edinburgh, and for a time held the post of a steamship surgeon. His varied experiences in both frigid and torrid zones have without doubt served as seed-thoughts to his fertile imagination when composing those character studies or stories that are now so much sought after by the fiction-reading public. Conan Doyle has long since ceased to sport his medical title, and has only once or twice referred to his early struggles with the healing art. His books have so marked a historic tendency that they are read by students, at least, with the same kind of interest that was awakened by Sir Walter Scott. He says of himself that he devoted two years to study of the times of Edward III in order to reconstruct the band of English archers which marched unchecked through France, Scotland and Spain. These are the heroes of his "White Company."

Death of a Physician by Cholera.—Dr. K. T. Thomas, a native medical missionary, for many years located at Srinagar in Kashmir, died by cholera and overwork in July last. He was an assistant of the brothers Drs. Neve, well known in this country, who conduct two missionary hospitals on the lofty table-lands of mid-Asia. Dr. Thomas had quite exhausted himself in helping Dr. Neve in attending to cholera patients, so that when he himself was taken sick he could not rally. His loss has already been felt to be a severe one.

When the cholera swept down on Kashmir there were just two physicians—Dr. Arthur Neve and the late Dr. Thomas, Dr. Ernest Neve having gone northward into Western Thibet with Dr. Jones, a newly appointed medical missionary for the Moravian frontier station at Leh—who were available to cope with the epidemic at Srinagar. These two physicians divided the town between them for medical duty—all the other Europeans fleeing to uninfected localities. The city itself "imbedded in the filth of ages," as Dr. Neve expresses it, and the prejudices of the people fostering the spread of the disease, suffered terribly. The deaths rapidly increased from five to ten in a day to 100, then 200, then 300, and a large proportion of these were buried within the twenty-four hours in which they were taken sick.

Dr. Thomas survived these heroic labors long enough to see the mortality fall about one-half, when he became the subject of an insidious attack, being sick about four days. A transfusion seemed to prolong life a day or more, but he became unconscious towards the last, and life flickered out like a lamp that had spent its oil.

Professor Billroth's Clinic.—A handsome engraving issued by Messrs. William Wood & Co., of New York. The picture is designed for framing and a place in a physician's office, for which it is well adapted. Those desiring copies should address the publishers.

The U. S. Pharmacopœia, 1890, which will be published during 1893, adopts in great measure the *metric system* of weights and measures. In order to provide a guide to the proper dosage, etc., Dr. Geo. M. Gould, author of "The New Medical Dictionary" has prepared a table of the official and unofficial drugs, with doses in both the *metric* and *English* systems; this table is to be published in P. Blakiston, Son & Co's., Physicians' Visiting List, for 1893, together with a short description of the metric system.

SELECTIONS.

Purification of Water by Metallic Iron.—The water of Grande-Nethe, at Antwerp, has been purified during the past six years, by means of Anderson's process, which is described as follows (*Chem. Zeit.*): The water passes, with moderate rapidity, through long cylinders which are kept in rotary motion and filled with iron filings. An abundant supply of air is carried into the cylinders by a series of pipes with which they are connected. The iron, whose surfaces are constantly renewed by the motion of the cylinders, is partially changed through the action of the water into ferrous carbonate; the air decomposes the latter into carbonic acid and ferrous hydrate which is again transformed into ferric hydrate. At the same time the organic substances are consumed, or withdrawn along with the ferric hydrate deposit, which is easily collected by a filter of sand. In this way the water has been shown by analysis to be so far purified of its micro-örganisms that it may be regarded as almost sterilized. The water of the Mississippi, which holds in suspension a very large amount of foreign matter, and does not clarify by standing, parts with seven-eights of its organic substances when treated as above, and becomes almost limpid.—*Druggists' Circular.*

Craniectomy.—Bourneville (*Semaine Medical*, August 10, 1892) at the Congress of Mental Medicine, presented a number of skulls of idiots, which showed no trace of synostosis or of premature ossification. Several skulls were shown on which craniectomy had been performed, and in these and in others the sutures had not united. He goes on to prove that Lannelongue's theory of microcephalus, on which the operation of craniectomy was based, rests on an unsound basis both anatomically and physiologically, and the proceedure should, therefore, be abandoned. The author reports never having seen a single case of complete synostosis in an idiot or "backward" child. Rejis also reported a dozen cases with no benefit to the little patients. Death occurred in one case. Much stress is laid on hygienic and educational measures in treating the cases.

BOOK REVIEWS.

Psycho-Therapeutics, or Treatment by Hypnotism and Suggestion. By C. Lloyd Tuckey, M.D. Third edition. Revised and Enlarged. London: Baillière, Tindall & Cox.

In the preface to this, the third edition of his work, the author says that the increased size of the present volume is due to the wish many persons have expressed for a book dealing more fully with the theory of psycho-therapeutics. It is exactly here that we fear the reader will be disappointed, and through no fault of the writer, as he has labored diligently in gathering material from the by no means barren literature. He has succeeded admirably in presenting his results in terse readable English. Notwithstanding all the labor that has been given to the elucidation of these phenomena the fact remains that such terms as the physiology and psychology of hypnotism, hypnotic suggestion, and therapeutic suggestion are as etherial as the alleged phenomena of spiritualism and just about as hard to define.

At the time the lamented Dr. Beard visited England and exhibited some hypnotic phenomena, the profession were almost a unit in denying the facts in toto. Since that time the doubters have become less until now scarcely one can be found who denies the hypnotic state and the more or less constant phenomena connected therewith. Whether these can be correlated and capable of therapeutic application remains to be seen; certain it is that "treatment by suggestion" has a sufficient number of followers of undoubted scientific reputation to entitle it to consideration.

In the small work before us we have an excellent *résumé* of the subject up to date. While the writer is evidently a believer in the main phenomena of hypnotism, and in the practicability of the treatment of disease by this means, we notice a marked absence of special pleading that has been only too common in the more recent German and French writers on this subject.

The work is divided into ten chapters, the first eight of which are devoted to a general consideration of the subject, largely from the historical standpoint. An effort is made in these chapters to correlate many isolated facts with the phenomena of hypnotism. Examples of the power of the mind over the body are given in the first two chapters, with some explanation of the mystic and shrine cures. Then follows a description of the treatment employed by Dr. Liébault, of Nancy. It is evident that our author leans strongly to the theories advanced by the Nancy school, and for the most part rejects those of Charcot and his pupils. Then we have an account of the best methods of inducing hypnotism, together with simulation tests, a discussion of the theories of Brown-Séquard and Lauder Brunton, and of the natural analogies of hypnotism.

The last two chapters are given up to an account of cases; the first taken from the writings of others and the last from his own practice. It is apparent that treatment by suggestion must stand or fall by the results achieved in practice. Not being founded as yet on anatomical or physiological data, its sole *raison d'être* must be found in the empirical results of those who practice it.

Among the cases are the following: Insomnia of three years' standing cured. Neurasthenia improved. Five cases of occupation neuroses have been treated by the writer, one of whom was not susceptible to hypnotism, the other four improved rapidly and were cured. One case of tabes was improved temporarily and the progress of the disease seemed to be stayed. A case of torticollis cured by one treatment. The following were improved or cured: Chronic diarrhœa, paroxysmal sneezing, chronic constipation, supra-orbital neuralgia, spinal irritation, functional heart trouble enuresis, gouty sciatica, chronic rheumatism, nervous dyspepsia, amenorrhœa, dysmenorrhœa, onanism, dipsomania tobacco habit, chronic alcoholism.

Two cases seem to be especially worthy of note, one was a case of initial disease with anasarca. Suggestion improved the heart action, and the dropsy was entirely removed later by strophanthus; another was a case of extreme anæmia, in which a month's use of Blaud's pills had proved ineffectual.

We note five or six cases of failure, some of which seemed to present every hope for success. That hypnotism has been advanced as a cure-all, and that it has wholly failed in these pretensions is true, but this has been true of almost all remedies. We think that a careful reading of Dr. Tuckey's book will show that it has a certain, though limited range of applications, comparable in many respects to that of massage, Swedish movement, rest-cure, etc. As such it may prove to be a valuable adjunct in the treatment of many conditions not readily controlled by medicaments.

LEONARD'S PHYSICIANS' POCKET DAY-BOOK. Bound in Red Morocco, with Flap, Pocket, Pencil Loop and Red Edges. Price, postpaid, $1.00. Published by the *Illustrated Medical Journal* Co., Detroit, Mich.

This popular day-book is now in its fifteenth year of publication. It is good for *thirteen months*, from the first of any month that it may be begun, and accommodates daily charges for fifty patients. besides having cash department. It is bound in flexible covers, *and weighs but five ounces*, so that it is easily carried in the pocket.

ASHEVILLE, OR THE SKY-LAND. By MRS. HARRIET A. SAWYER. St. Louis. 1892. Price seventy-five cents.

This is a handsomely arranged and printed souvenir of this much written about and talked of part of our Wonderland.

MEMORANDUM ON POISONS. By THOMAS HAWKES TANNER, M.D., F.L.S. Seventh American from last London edition. Revised by JNO. J. REESE, M.D., late Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania. Philadelphia: P. Blakiston, Son & Co. Price 75 cents.

The number of editions testifies very ably to the value of this little memorandum. Its arrangement is clear, concise and not voluminous. It will prove an excellent pocket manual for practitioners.

DISEASES OF THE KIDNEYS AND BLADDER. A Text-book for Students of Medicine. W. F. MCNUTT, M.D., M.R.C.S., Ed., L.R.C.P., Ed., Professor of the Principles and Practice of Medicine, University of California, etc. Philadelphia: J. B. Lippincott & Co.; Chicago: A. C. McClurg & Co. 1893. Price $2.50.

In this book, based mainly on the lectures delivered at the University of California (San Francisco), the author takes up a class of cases which have and do prove unsatisfactory in results of treatment to a great number of physicians, owing chiefly to the length of time required for success. Dr. McNutt deals thoroughly and fairly with his subject, and his book will be found of great benefit to young practitioners as well as to students.

THE MASTOID OPERATION, INCLUDING ITS HISTORY, ANATOMY, AND PATHOLOGY. By SAMUEL ELLSWORTH ALLEN, M.D. Cincinnati: Robert Clark & Co. 1892. Price $1.25.

While containing "nothing new," as the author himself states, the above publication handles the subject matter in a clear, concise and exhaustive style that recommends it highly. The first chapter, dealing with the history of the operation, is especially interesting as giving line of work and results obtained by the first operators in this field, while the following chapters on the anatomy and pathology of the parts as well as the mode of operating, deal ably with the subject in all its aspects. The subject matter is one of serious interest not only to the surgeon, but to the general practitioner.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY. A Manual for Students and Practitioners. By BENNETT S. BEACH, M.D., Lecturer on Histology, Pathology and Bacteriology, New York Polyclinic. Student's Quiz Series. BERN B. GALLAUDET, Editor. Philadelphia: Lea Bros. & Co. Price $1.00.

A thorough understanding of the three branches here considered forms a scientific basis for a study of disease that is better appreciated every year. Students will find here a key to unlimited knowledge.

A TEXT-BOOK OF NERVOUS AND MENTAL DISEASES. By LANDON CARTER GRAY, M.D., Professor of Diseases of the Mind and Nervous System in the New York Polyclinic. Octavo, about 800 pages, richly illustrated. Lea Brothers & Co., Publishers, Philadelphia. Will be issued shortly.

ANÆSTHETICS. THEIR USES AND ADMINISTRATION. By DUDLEY WILMOT BUXTON, M.D., B.S., Member of the Royal College of Physicians; Administrator of Anæsthetics and Lecturer in University College Hospital, etc. Second Edition. Philadelphia: P. Blakiston, Son & Co. Price 50 cts.

The subject matter of this publication is one of great interest to the general practitioner as well as the surgeon. The importance of a special training for those intending to administer anæsthetics is well set forth, and physicians as well as students will find great help from a thorough study of its pages.

THE EXTRA PHARMACOPŒIA. By WM. MARTINDALE, F.C.S., Late Examiner of the Pharmaceutical Society and Late Teacher of Pharmacy at University College. Seventh edit.

The rapid strides made in the field of chemistry necessitate a like advance in all works on pharmacy. "The Extra Pharmacopœia" aims to keep abreast of the steady progress of chemistry and the newer drugs are treated of mainly, as well as any alteration in the older preparations.

GYNECOLOGY. A Manual tor Students and Practitioners. By G. W. BRATENAHL, M.D., Assistant in Gynecology, Vanderbilt Clinic, New York; and SINCLAIR TOUSEY, M.D., Assistant Surgeon, Out-patient Department, Roosevelt Hospital, New York. BERN B. GALLAUDET, M.D., Editor, Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Bros. & Co. Price $1.00.

The value of "The Student's Quiz Series," of which the above is one, has been well proven by the steadily increasing demand for the same. This little compend will give the student a grasp of the subject that will help him greatly when pursuing a more extended course of study.

MISCELLANY.

AT THE second annual meeting of the American Electro-Therapeutic Association, held in New York, October 4, 5 and 6, the following officers were elected for the ensuing year: President—Dr. Augustin H. Goelet, of New York; Vice-Presidents—Dr. William F. Hutchinson, of Providence, R. I.; Dr. W. J. Herdman, of Ann Arbor, Mich.; Secretary—Dr. M. A. Cleaves, of New York; Treasurer—Dr. R. J. Nunn, of Savannah, Ga. Executive Committee—Dr. W. J. Morton, of New York; Dr. G. Betton Massey, of Philadelphia; Dr. Robert Newman, of New York; Dr. Chas. R. Dickson, of Toronto, Canada; Dr. J. H. Kellogg, of Battle Creek, Mich. The next meeting is to be held September 12, 13 and 14, 1893.

WANTED.—Will pay 10 cents per copy for the following numbers of THE JOURNAL: Vol. 2, No. 4, Jan. 26; No. 19, May 2, 1884. Vol. 5, No. 2, July 11; No. 3, July 18, 1885. Vol. 6, No. 6, Feb. 6, 1886. Vol. 15, No. 1, July 5; No. 4, July 26; No. 5, Aug. 2; No. 11, Sept. 13; No. 13, Sept. 27, 1890. Vol. 16, No. 1, Jan. 10; No. 2, Jan. 17; No. 3, Jan. 24, 1891. Vol. 17, No. 3, July 18, 1891.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from October 29, 1892, to November 4, 1892.

Capt. Henry P. Birmingham, Asst. Surgeon U. S. A., leave of absence granted is hereby extended one month.

First Lieut Harlan E. McVay, Asst. Surgeon U. S. A., will proceed from Ft. Wingate, N. M., to the camp south of Bisbee, A. T., and report to Lieut.-Col. J. W. Barlow, corps of engineers, Commissioner of International Boundary line survey, for duty, relieving Capt. E. A. Mearns, Asst. Surgeon U. S. A.

PROMOTION.

First Lieut. Nathan S. Jarvis, Asst. Surgeon U. S. A., to be Asst. Surgeon, with rank of Captain, October 14, 1892, after five years' service, in accordance with Act of June 23, 1874.

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ORIGINAL ARTICLES.

FOOD AND HYGIENE OF OLD AGE.

Read by Title in the Section of Physiology and Dietetics, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June 7, 1892.

BY J. M. FRENCH, M.D.,
OF MILFORD, MASS.

Old age is a period of diminished energy. This is its primary, central characteristic, and carries with it a diminution of all the powers of manhood. The machinery of life is wearing out. The old man's activity is less, his paces are slower and his pulse less vigorous than when he was in his prime, his grip is less strong and his way less forceful. He no longer attempts great enterprises, nor could he carry them out if undertaken. He does not readily adapt himself to changes in his environment. His food is more slowly digested and less perfectly eliminated. His bones have become brittle, and when broken unite but slowly and imperfectly. He does not rally readily from even slight attacks of sickness, and finds himself losing each year something of the strength and elasticity of manhood. His teeth are decayed, his cheeks are sunken and his brow is wrinkled, his arteries are hardened and his hair has turned white or is fallen out. His sight is dim, his hearing dull, and all his senses have lost their acuteness; while his memory of recent events is well nigh gone, and all his mental faculties are growing weaker day by day.

The period at which this condition approaches is determined less by the number of years through which a man has passed than by his constitution and habits of life. Some men are far advanced in senility at fifty, while others seem hardly to have entered within its borders at eighty.

The man who has reached that period of advanced life which borders upon old age in reasonable health, has left many dangers behind him, and is safe from many causes of death which have menaced him along the way. The susceptibility to contagious and zymotic diseases which characterized his early life has been exhausted, and with it one great source of danger is gone. The period of manhood, which is marked by the greatest development of hereditary and general diseases, has also passed, and from it he has come forth with a constitution hardened by the storms and trials of three-score years. But now is at hand the season of old age, when local diseases manifest their greatest comparative activity and virulence. It is the weakest which now give way, and these are the three vital organs, the lungs, brain, and the heart, in the order named, and after these the stomach, liver and kidneys. Of single diseases, pneumonia carries off more aged people than any other.

There remains a considerable proportion—probably from one-third to one half—of those who reach the age of sixty-five, who, by reason of inherited endurance and favorable circumstances, survive the accidents of life, and are carried off at last by old age, that gradual fading away of the vital forces which is the only natural death.

To enable the old man to reach this end at last in safety, but not to reach it until it has been postponed to the very latest practicable moment; to adapt his environment meanwhile to his changed conditions; to conserve his strength and favor his weaknesses; and thus to conduct him safely through the dangers incident to advancing years, and bring him to the close of life by as easy a road as possible, with the greatest amount of comfort and the least of suffering—these are the objects of the hygiene of old age.

The first necessity of age as of youth is food; but errors in diet are specially harmful now. The young man has a reserve fund of vitality to draw upon, and though he may suffer acutely for a time, when too much food is taken, or food of an improper character or not properly prepared, yet he soon throws it off, and does not seem to suffer permanently. But the old man's bank account is already overdrawn, and he is living from hand to mouth. The gluttonous debauch which in early life might only have caused him a day's discomfort from indigestion, or of misery from a bilious attack, would now be liable to result in sudden death. He must therefore carefully measure his digestive power, and adapt his food, both in quantity and kind, to the needs of his system.

The old man no longer needs food to promote the growth of tissue, for tissue-growth in him has long since ceased. In his present condition of diminished activity, the waste of his tissues is also greatly lessened, and the need of food to repair this waste is correspondingly less. To maintain the vital heat is still his urgent need, and with increasing years the task grows more and more difficult.

As a whole, then, it is evident that he now requires less food than in youth or middle life, and food of a somewhat different character. Flesh food, and especially lean meat, which is chiefly useful in promoting the growth and repairing the waste of tissue, should not form a large part of the old man's diet. And observe how perfectly nature has adapted his capabilities to his needs. The teeth, which are required most of all in tearing and grinding the fibre of meat, to fit it for digestion, have now disappeared entirely, or become so weak and decayed as to be unfit for performing this office. And it is a significant fact, that in healthy individuals, whose digestive organs have not been ruined by the over-much artificiality of civilized life, the decay of the teeth is coincident with the approach of old age. As the active period of life has passed, and the food which fosters activity is no longer needed, so the means of preparing such food is no longer furnished.

Since the digestive force is now less, the food must be of such a character as to require less effort to fit it for assimilation. As the teeth can no longer grind and tear the food, it must therefore be furnished in such a form as to be early acted upon by the digestive fluids. The tendency to sluggish action of the bowels which is common in old age, requires that the nourishment should not be taken in too concentrated form, but should be of sufficient bulk, should contain enough waste matter, and be of such a character as to stimulate digestion. Of such a nature are the simpler preparations of the common cereals, as wheat, rice, oat-meal, and indian-corn; also most ripe fruits and fresh vegetables. Light mixed animal and vegetable soups are often wholesome, as is also an occasional dish of fresh fish. Nor need eggs, or even flesh food, be entirely forbidden, but only taken in great moderation. As a drink, pure water is the best, and may be taken freely. For those who, from lifelong habit, prefer warm drinks instead of cold, weak tea and coffee may be allowed. Milk may be taken as a food, provided it "ageees with the stomach," but it can hardly be considered as a drink.

Again, since large quantities of food burden the stomach and oppress the system, it is better, in old age as in infancy—in man's second childhood as in his first—that he should take food not only in much smaller quantities than in middle life, but also at more frequent intervals—say four meals a day instead of three.

All this is no new doctrine, but one that is justified by experience. Luigo Carnaro, who died at Padua, in the sixteenth century, "without any agony, sitting in an elbow-chair, being above an hundred years old," wrote several essays when between eighty-three and ninety-five years of age, in which he advocated a decreasing quantity of food at lessened intervals for the aged, to correspond with their increasing age and diminished activity.

"There are old lovers of feeding," he writes, "who say that it is necessary they should eat and drink a great deal, to keep up their natural heat, which is constantly diminishing as they advance in years; and that it is, therefore, their duty to eat heartily, and of such things as please the palate, be they hot, cold, or temperate; and that, were they to lead a sober life, it would be a short one. To this I answer, that our kind mother, nature, in order that old men may live still to a greater age, has contrived matters so that they should be able to subsist on little, as I do, for large quantities of food cannot be digested by old and feeble stomachs. By always eating little, the stomach, not being much burdened, need not wait long to have an appetite. It is for this reason that dry bread relishes so well with me; and I know it from experience and can with truth affirm, I find such sweetness in it, that I should be afraid of sinning against temperance, were it not for my being convinced of the absolute necessity of eating it, and that we cannot make use of a more natural food. And thou, kind parent nature, who actest so lovingly by thy aged offspring in order to prolong his days, hast contrived matters so in his favor, that he can live upon very little; and in order to add to the favor, and do him still greater service, hast made him sensible that, as in his youth he used to eat twice a day, when he arrives at old age, he ought to divide that food, of which he was accustomed before to make but two meals, into four, because, thus divided, it will be more easily digested; —provided, however, he lessens the quantity as his years increase. And this is what I do, agreeably to my own experience; and therefore my spirits, not being oppressed by much food, but barely kept up, are always brisk, especially after eating, so that I am obliged then to sing a song, and afterwards to write. Nor do I ever find myself the worse for writing immediately after meals, nor is my understanding ever clearer, nor am I apt to be drowsy, the food I take being in too small a quantity to send up any fumes to the brain. Oh, how advantageous it is to an old man to eat but little! Accordingly I who know it, eat but just enough to keep body and soul together."

Such a regimen as this which was advocated by Cornaro does not, of course, tend to corpulence; and indeed, old age has few greater enemies than corpulence. Heart, lungs and brain, stomach, liver and kidneys, are all oppressed thereby. Apoplexy and Bright's disease carry off the heavy-weight, while the lean and slender man, who has escaped the dangers of the middle period of life, outlives him by many years. Indeed, in looking over the octogenarians of my own acquaintance, I have been impressed by the fact that there was not one among them who could by any possibility be called corpulent, but every one was thin and spare. Surely this is a significant fact. (The Secretary confirms this.)

With reference to the use of alcoholic stimulants in old age, what shall I say? It has long been taught, and generally believed until of late, that in old age there is an especial indication for the use of spirituous liquors. But this doctrine is closely allied to that which teaches the need of large quantities of concentrated nutriment "to keep up the strength" of the aged, and the two must stand or fall together. If the principles I have been advocating are correct, then old age is the period of all others when the use of alcohol is injurious, dangerous, suicidal. With advancing knowledge, there is no longer any justification for the supposition that alcohol fosters vital heat or imparts vital force; for science has demonstrated that the sensations which seem to indicate this in either case are opposed to the fact; that alcohol lowers the temperature, lessens the powers of resistance, and at the bottom is not a stimulant at all, but rather a paralyzant. In its primary action, in moderate doses, alcohol greatly increases the work of the heart—but one of the chief dangers of old age arises from over-action of the heart; it dilates the arterioles and increases the blood supply to the brain and peripheries—but in old age all the arteries are suffering from fatty degeneration or sclerosis, and rupture easily, resulting in apoplexy, paralysis, death; it is a whip, which incites the jaded system to intenser effort—but the safety, the very existence, of old age, demands that no intense or unusual effort be required of it; it is a draft payable at sight, which enables a man to draw for to-day's needs upon the bank of to-morrow—*but old age has no to-morrow.*

It may be laid down as a general principle, that those substances whose chief action upon the nutritive system is to retard the normal rate of tissue change, while they may be valuable therapeutic remedies in conditions of disease, or even highly useful in occasional emergencies in health, cannot be considered, so far at least as this action is concerned, as proper physiological foods for daily use: for, by preventing the excretion of worn-out cells, and thereby favoring the accumulation in the system of waste products, they promote the atheromatous or fatty degeneration of healthy tissues, whether nervous, muscular, secretory or connective. As these degenerative changes throughout the whole organism are those which chiefly characterize senility, it may be said without exaggeration that whatever tends to retard tissue change, hastens the approach of old age. This is true of a large class of substances, sometimes known as accessory foods, of which alcohol, opium and tobacco are representatives. While the same property is also found to a certain extent in tea, coffee, chocolate and other articles of this class, it is in them overshadowed by other and more important ones, so that the question of the advisability or otherwise of their use cannot be decided upon this one fact alone.

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Of scarcely less importance is a careful attention to the kidneys and bladder. It should be an inviolable rule with the aged to attend to the calls of nature in this direction at the first indication, whatever else may wait. Enlarged prostate is a common disease in men past 65, and one which requires careful management. When aggravated by "taking cold," by the jar produced by riding over rough roads or taking long journeys in the cars, or by the irritation of a distended bladder from lack of attention to the indications of nature, obstinate retention of urine is often the result, necessitating the frequent use of a catheter, or sometimes of a trocar or aspirator, and not infrequently hastening or even directly resulting in death.

I have spoken of old age as a period of diminished activity. But I desire it to be distinctly understood that I do not mean that it is or should be a period of inactivity, but only to emphasize the change from the more intense and wider activity of manhood. For no fact is better established than the need of abundant exercise, both physical and mental, to the prolongation of life, health and vigor. Few things are more disastrous to these ends, than for a man in advanced years, accustomed to a stirring and active life, abruptly to "retire from business," thereby exchanging habits of labor for those of ease, of care for freedom, under the mistaken notion of thereby enjoying a well-earned rest for the remainder of his days. Rather should his relinquishment of business be gradual, with his lessening duties adapted to the failing energies of body and mind, but always sufficient to preserve his interest in life, and incite him to a reasonable degree of exertion. Not only is it "better to wear out than to rust out," but it takes longer to do it. If his business is such as to keep him much of the time out of doors, so much the better for his health. If not, then he needs some additional incentive to lead him into the pure air and sunshine, essential to age as to youth.

His power of resisting external influences, which in youth was strong, is now almost gone. He needs, therefore, to use special care to protect himself from heat, cold and atmospheric vicissitudes, for these are responsible for a very large proportion of what may be called the premature or accidental deaths among the aged. Especially is cold a mortal foe to old age. According to the English Registrar-General, a sudden decline of temperature results in a mortality based upon a given rule in regard to age. In persons under 30, the effect of cold is not indicated by an increase of mortality: above that age it doubles with every nine years of life. That is, for every one person at the age of 30 whose death is caused by a certain low temperature, there will be two at 39, four at 48, eight at 57, sixteen at 66, thirty-two at 75, and sixty-four at 84.

Add to the effects of cold those of heat, moisture, winds and sudden changes of temperature, and we have, in a climate like ours, a most formidable array of dangers to old age from atmospheric causes. To guard against these, the old man must not only suit his food to the climate and season, but he must clothe himself warmly—preferably in woolen garments, as being the poorest conductor of heat—must avoid all undue exposure either to extreme or sudden changes of temperature, and must occupy a comfortable room. His sleeping-rooms should be warm, well-aired and dry. Many a time has the "spare room" proven fatal to gray hairs and decrepit age, resulting in "a cold," pneumonia, death.

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Since the digestive force is now less, the food must be of such a character as to require less effort to fit it for assimilation. As the teeth can no longer grind and tear the food, it must therefore be furnished in such a form as to be early acted upon by the digestive fluids. The tendency to sluggish action of the bowels which is common in old age, requires that the nourishment should not be taken in too concentrated form, but should be of sufficient bulk, should contain enough waste matter, and be of such a character as to stimulate digestion. Of such a nature are the simpler preparations of the common cereals, as wheat, rice, oat-meal, and indian-corn; also most ripe fruits and fresh vegetables. Light mixed animal and vegetable soups are often wholesome, as is also an occasional dish of fresh fish. Nor need eggs, or even flesh food, be entirely forbidden, but only taken in great moderation. As a drink, pure water is the best, and may be taken freely. For those who, from lifelong habit, prefer warm drinks instead of cold, weak tea and coffee may be allowed. Milk may be taken as a food, provided it "ageees with the stomach," but it can hardly be considered as a drink.

Again, since large quantities of food burden the stomach and oppress the system, it is better, in old age as in infancy—in man's second childhood as in his first—that he should take food not only in much smaller quantities than in middle life, but also at more frequent intervals—say four meals a day instead of three.

All this is no new doctrine, but one that is justified by experience. Luigo Carnaro, who died at Padua, in the sixteenth century, "without any agony, sitting in an elbow-chair, being above an hundred years old," wrote several essays when between eighty-three and ninety-five years of age, in which he advocated a decreasing quantity of food at lessened intervals for the aged, to correspond with their increasing age and diminished activity.

"There are old lovers of feeding," he writes, "who say that it is necessary they should eat and drink a great deal, to keep up their natural heat, which is constantly diminishing as they advance in years; and that it is, therefore, their duty to eat heartily, and of such things as please the palate, be they hot, cold, or temperate; and that, were they to lead a sober life, it would be a short one. To this I answer, that our kind mother, nature, in order that old men may live still to a greater age, has contrived matters so that they should be able to subsist on little, as I do, for large quantities of food cannot be digested by old and feeble stomachs. By always eating little, the stomach, not being much burdened, need not wait long to have an appetite. It is for this reason that dry bread relishes so well with me; and I know it from experience and can with truth affirm, I find such sweetness in it, that I should be afraid of sinning against temperance, were it not for my being convinced of the absolute necessity of eating it, and that we cannot make use of a more natural food. And thou, kind parent nature, who actest so lovingly by thy aged offspring in order to prolong his days, hast contrived matters so in his favor, that he can live upon very little; and in order to add to the favor, and do him still greater service, hast made him sensible that, as in his youth he used to eat twice a day, when he arrives at old age, he ought to divide that food, of which he was accustomed before to make but two meals, into four, because, thus divided, it will be more easily digested; —provided, however, he lessens the quantity as his years increase. And this is what I do, agreeably to my own experience; and therefore my spirits, not being oppressed by much food, but barely kept up, are always brisk, especially after eating, so that I am obliged then to sing a song, and afterwards to write. Nor do I ever find myself the worse for writing *immediately after meals, nor is my understanding* ever clearer, nor am I apt to be drowsy, the food I take being in too small a quantity to send up any fumes to the brain. Oh, how advantageous it is to an old man to eat but little! Accordingly I who know it, eat but just enough to keep body and soul together."

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The integrity of the heart and nervous system demands that the old man should avoid all extreme or sudden physical exertion, all intense and depressing mental emotion. Running to catch the cars, lifting a heavy weight, making an eloquent and impassioned after-dinner speech, or indulging in a paroxysm of passion—all these have often been proven to be only forms of suicide for the weakened heart and brittle arteries of the aged. The safety of gray hairs depends rather upon the regular continuance in accustomed paths, where to go on is easier than to stop or turn aside. Habits are strong in the decline of life, and not easily changed. To act in accordance with these is to travel in the line of the least resistance.

The man who has ceased to take an active concern in what is going on in the world about him, has but a feeble hold upon the world itself. When the wish and the will to live are gone, life is sure soon to go too. Dr. George M. Beard has well said that it does not take much experience in practice for a physician to learn that men die who might just as well live if they only resolved to live, and that myriads who are invalids could become strong if they had the native or acquired will to vow they would do so.

A cheerful disposition, which enables its possessor to see the bright side of everything, and prevents him from wearing himself out with worry when things do not go to suit him, is a potent factor in prolonging life. Mental activity, if not coupled with too much nervous strain, may with advantage be kept up to the close of life. It is a well-known fact that literary and scientific men are as a rule long-lived. In all countries, ministers among professional men, and farmers among manual laborers, are the longest-lived classes in the community, and they are exactly the ones who enjoy the benefits of mental and physical labor under the most favorable conditions.

Of prime importance is sleep. Sleep oils the wheels of life, and lessens the friction of labor. The want of it causes all the machinery of life to run with difficulty, and wear out rapidly. Sleep recreates the nervous system—and sleeplessness breaks down the strongest frame. Especially does old age need abundant sleep, that all the vital forces may be carefully husbanded.

To sum up briefly: The food of old age should be simple, nutritious but not too concentrated, not too largely nitrogenous. It should be taken four times a day, in less quantity as a whole than in middle life, and in a soft and friable condition. Stimulants and narcotics should be avoided, unless required by lifelong habit. Tea and coffee may be allowed in moderation. The calls of nature should be promptly attended to. All excesses should be avoided, and regularity, temperance and moderation observed in all things. Careful protection from cold and atmospheric vicissitudes is required. The mind should be kept active to the last. Avoid worry and fret. Look on the bright side of life. Take plenty of sleep. Have the best of care in health, and of nursing in sickness. Avoid passion, excitement, luxury, overexertion. Thus will life be lengthened, and old age made enjoyable.

HYPERTROPHY OF THE PHARYNGEAL TONSIL.

A clinical lecture delivered at the College of Physicians and Surgeons, Chicago, May 12, 1892.

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Synonyms.—Hypertrophy of Luschka's tonsil. Adenoid vegetations of naso pharynx, post-nasal growths or vegetations.

Definition.—This affection may be defined as an abnormal enlargement of the lymphoid structures normally found at the vault of the pharynx, frequently causing partial deafness, alterations in the voice, more or less nasal obstruction, with occasional deterioration of the general health.

History.—Czermak[1] was probably the first to have seen these growths and as early as 1860 described them with considerable accuracy, but failed to recognize their clinical importance. Voltolini[2], in 1865, described a case of deafness associated with, and probably due to this hypertrophy. Löwenberg[3] published a similar account of three cases in the same year and made some commendable suggestions as to their pathological anatomy. Meyer,[4] of Copenhagen, in 1868, was the first to insist on their clinical importance. His interesting paper, in which he gave an admirable account of the symptoms, detailed the microscopical appearances and pointed out the mode of treatment which he had found most useful, was based on a study of one hundred and two cases.

Subsequent writers have given us little of any importance that was not thoroughly understood by Meyer, while our increased clinical experience with the disease, has also demonstrated the correctness of most of his original views.

Etiology.—For convenience the causes of this condition may be divided into the predisposing and exciting ones. Among the former may be mentioned heredity, which so far as known plays very little part in its etiology, yet the disease has been understood for so short a time that it is impossible to determine whether the parents of these patients have ever suffered from a similar condition or not. Several children of the same family are commonly found so affected.

The disease is said to be more frequently found among those of the Jewish race, than of any other. It is essentially a disease of children and young adults, being rarely found after thirty years of age. Sex appears to have no influence in its production. Cold, damp climates are said, by some, to be very productive of this disease, but this has doubtless been unduly exaggerated by a majority of writers. Anterior stenosis of some form or other is associated with a large number of these cases. This is more often caused by hypertrophy of the inferior turbinated body, but not unfrequently do we find some deviation of the septum sufficient to produce more or less obstruction of one or both nostrils. About sixty per cent. of all cases of enlarged oral tonsils suffer from post-nasal growths and nearly all patients having cleft palates have them also.

Meyer[5] attributes the latter fact to the direct irritation of the mucous membrane, produced by the food passing into the naso-pharynx, but this is a rare complaint in these cases and probably has nothing to do with its cause. Billroth[6] has pointed out that by the contraction of the upper constrictor, the pharynx is brought nearly into apposition with the margins of the hard palate, and the tonsils being approximated by the same agency, the cleft is almost closed. Löwenberg[7] believes the lymphatic temperament to be the cause in a majority of the cases which he has seen. Such a temperament according to his description would appear to be identical or allied to struma, which Meyer,[8] Mackenzie,[9] Bosworth,[10] and Browne, [11] do not consider as any etiological factor at all.

The exciting causes seem to be about the same as those causing the enlargement of the oral tonsils. The exanthematous diseases, especially measles, and scarlet-fever, and diphtheria occupy a prominent place. Frequent colds and unsanitary surroundings, especially in children liable to catarrhal trouble, may be the cause in some cases. Purulent and muco-purulent rhinitis is occasionally associated with this condition, but whether the cause or the effect, I am unable to state. Atrophic rhinitis has been observed by Bosworth [12] in four of his cases.

You will be unable to determine the date of the commencement of this trouble and its exact etiology in a great many of the patients which you will be called upon to treat.

Symptoms.—The first symptom which usually attracts the attention of the child's parents or attendants is the labored breathing or snoring during sleep. This is invariably present in a greater or less degree, but may exist only a part of the night. It is caused by the impinging of the indrawn current of air on the soft palate, which is thrust forward and downward by the growth. Not infrequently do we hear this sound when the child's mouth is entirely closed. In these cases the palate is set vibrating by the inspired air directed upon its upper surface. The breathing is usually labored and when the growth has attained considerable size, it may at times seem entirely or partially arrested. The attacks of dyspnœa may be so severe as to resemble laryngismus stridulus. Shortness of breath is frequently noticed on slight exertion.

The child is usually restless, and often wakes during the fore part of the night, occasionally with a mild delirium, but towards morning sinks into a deep sleep from which he awakes with a headache and a feeling of malaise which may last for several hours. Older patients frequently complain of a lack of ambition and a dry, bad-tasting mouth on rising in the morning, which wears off as the day advances. Mouth breathing is quite a prominent symptom, and may be present when the growth is very small. This is not so noticeable during the day when the patient is awake, but during sleep, when the voluntary muscles of respiration are not brought into play, the mouth is nearly always open.

There is frequently more or less deafness, with an occasional suppurative otitis-media. There are no complications of so great importance, or which deserve so prompt recognition as these ear troubles, for when neglected, they may result in the permanent loss of their important function. The defective hearing is claimed by many to be either the result of the pressure of the growth on the Eustachian tubes, causing their obstruction, or to the extension of the inflammation to the middle ear. The majority of middle ear troubles, however, are probably due o the stagnation and consequent rarification of the ir in the vault of the pharynx and Eustachian tubes, caused by the obstruction to the normal nasal respiration.

Speech is thick and indistinct and does not differ materially from that found in other forms of nasal obstruction. It is frequently impossible for the patient to pronounce m, and n; b, being used for the former, and d, for the latter. There is occasional complaint that the younger patients seldom blow their nose, although the voice sounds as if they had a cold in the head. In adults, as it requires a greater effort for the production of high tones, the voice usually tires very easily after singing a short time. There is nearly always a profuse post-nasal discharge of mucus or muco-pus of a thick ropy consistency, which necessitates the patients clearing the naso-pharynx by acts of hawking. Occasionally, though not often a chronic rhinorrhœa may exist.

Cough is frequently due to the continued mouth breathing or to the secretions making their way into the pharynx or larynx. A barking reflex cough is occasionally observed. Headache at times is annoying. Epistaxis is somewhat rare although the child may once in a while expectorate some mucous streaked with blood.

Chatillier,[13] mentions both night-mare and night sweats as symptoms. The latter is found in a small proportion of cases, probably due more to the impaired general health than to the local condition. Children are usually exceedingly stupid, unable to fix their attention, and have an inaptitude for intellectual work. The appetite is usually capricious and there may be some disorder of digestion. There is usually more or less impairment of olfaction and of the sense of taste.

There is no objective symptom more noticeable or characteristic, especially in children, than the peculiar facial appearance. The mouth is opened, the lower jaw hangs down and the lips are prominent, but expressionless. The bridge and root of the nose are broad and flattened; the alæ dimpled and collapsed; the cheeks seem flattened and the eye-brows depressed.

Spicer[14] has called attention to a somewhat unique symptom, which he has observed in a number of cases, namely, the presence of an enlarged transverse vein at the root of the nose. He believes this to be due to the pressure of the enlarged gland on the outlet of veins as they pass through the spheno-palatine foramina. This is occasionally observed, but it is by no means common.

On examination, the membrana tympani is usually thickened, sometimes congested, and in all cases more or less depressed. This great depression is claimed by MacDonald,[15] to be pathognomonic of this condition. It is probably due to the fact, that the oxygen contained in the air, imprisoned in the Eustachian tubes, is exchanged for carbonic acid, which, being dissolved in the mucus, somewhat lessens the intra-tympanic pressure. Atmosphere not being allowed to enter the tubes, exerts its pressure from without on the drum-head and drives it inward.

The nasal fossæ are found abnormally small in some cases. There is nearly always some hypertrophy or turgesence of the inferior turbinated bodies. The faucial tonsils are often enlarged and masses of glandular tissue can usually be seen at the side of the pharynx, back of the posterior pillars of the fauces. The edges of the soft palate are congested, rounded and flabby. The uvula is congested and œdematous. Frothy mucus or muco-purulent secretion can be seen on the posterior wall of the pharynx coming down from the pharyngeal vault. On the removal of this, the posterior wall appears more or less granular. The follicles are arranged symmetrically and become larger as they ascend, until just above the edge of the palate they blend with the glandular hypertrophy in the naso-pharynx.

If sufficient care and patience are exercised, a thorough examination of the parts can usually be made with the rhinoscope. The hypertrophy appears attached to the posterior wall and vault of the pharynx, is more or less nodular and has a well defined cushion-like appearance, (see Fig. 1). It is usually of a pale pink or grayish color. In rare instances it hangs from the vault of the pharynx as separate or pedunculated growths.

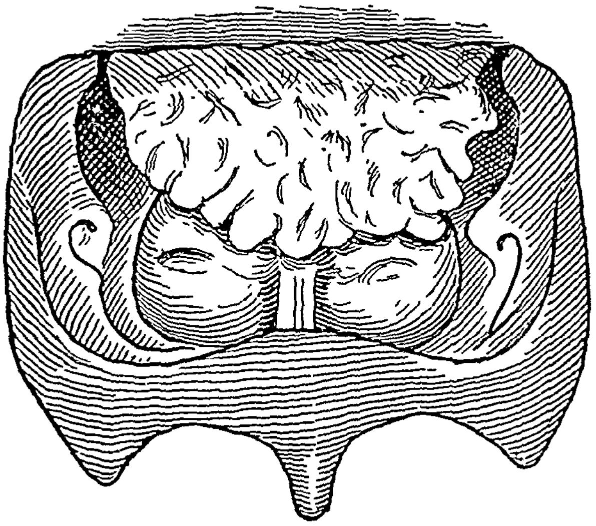

Fig. 1.—Hypertrophy of the pharyngeal tonsil.

The surface is never granular but may at times be coarsely lobulated. Blood vessels are never seen on its surface. In adults, where the growth has commenced to atrophy, it has a much smoother appearance. The enlargement interrupts the view of the broad upper part of the septum, and its size can be estimated by the extent to which this is indiscernable. (See Fig. No. 1).

In those cases in which a posterior rhinoscopic examination can not be made, as in some children, it will be necessary to make a digital exploration of the parts. In doing so a gag should be inserted between the teeth, the forefinger of the right hand carried back to the pharyngeal wall and then turned up behind the palate, where you will at once detect the glandular enlargement. Those of you who are unfamiliar with the feeling of a normal naso-pharynx will do well to follow out the suggestions of Lennox Browne[16] which are, that the finger should first feel for the lower part of the septum, when the posterior nares can be explored. The Eustachian orifice with its cartilaginous cushion can then be made out laterally. The roof can be examined by passing the finger from the septum upwards and backwards. Very slight hæmorrhage may follow this examination, but it is not especially painful to the patient.

Chronic rhinitis, pharyngitis and laryngitis will be found associated with this condition in a great many cases. An occasional deformity of the chest, known as the pyriform or pigeon breast, is said by some to result from this condition.

Pathology.—An examination with a higher power microscope proves these hypertrophies to be simply a hyperplasia of the glandular structure, normally found at the vault of the pharynx, and not of the nature of new growths. They are highly vascular and are covered with a layer of columnar ciliated epithelium. They consist of an over-growth of the lymphoid and connective tissue, nearly identical to that found in hypertrophy of the oral tonsils, and are composed of a number of lymph follicles which are inclosed and separated from each other by a retiform connective tissue.

Diagnosis.—When we consider the subjective symptoms, the facial expression, dead voice, and the result of the rhinoscopic or digital examination, the diagnosis seldom presents any difficulty. Occasionally fibrous tumors of the naso-pharynx, retro-pharyngeal abscess, mucous polypi and posterior hypertrophy of the inferior turbinated bodies have been mistaken for this affection. Fibrous tumors are very much harder, bleed easily and profusely, are usually bright red or purple in color, have enlarged blood vessels on their surface and when large, may cause distortion of the parts. Mucous polypi rarely occur at so early an age; nearly always extend from the nose into the naso-pharynx; are soft, movable and transparent, and blood vessels are frequently seen coursing across their surface. The posterior wall of the pharynx is not involved and they can nearly always be detected by anterior rhinoscopy. In posterior hypertrophy of the inferior turbinated bodies, the growth is in front and not posteriorly. Retro-pharyngeal abscess is accompanied by more or less pain, especially in swallowing and is often insidious. There is some tenderness and pitting on pressure. The enlargement usually extends far down on the posterior wall.

Bosworth[17] has recommended a very simple means of determining whether there is any obstruction to the nose and naso-pharynx, by means of a heavy oil, as liquid vaseline used in an oil atomizer, producing a spray of like density to smoke. This when sprayed into one nostril, should the cavities be free, will emerge from the opposite, in the same amount and with the same force as it went in. When there is some obstruction, the spray, if it emerges at all, will be in a very small amount and its force very much diminished. This is certainly a very easy test and is regarded by Bosworth as being a very sure one. However, I would not place too much reliance on this test alone.

Prognosis.—In about seventy-five per cent. of these cases, the glandular enlargement will atrophy, if left to itself, at about the fourteenth or fifteenth year, but in the meantime irreparable damage may be done to the hearing, voice and general health. The result of proper treatment in these cases is highly satisfactory, and when commenced early in the course of the disease the entire train of symptoms usually disappear.

When there are grave ear troubles, which have existed for some time, the prognosis must be more guarded. There is always some improvement and arrest of further extension of it, but perfect restoration of hearing can not be obtained in all cases. The natural voice is not always immediately restored.

Treatment.—As a rule medical treatment is of no value. I have occasionally derived some benefit from the use of the syrup of the iodide of iron, especially in anæmic children. It is very doubtful however, if absorption of these growths is ever promoted by the administration of an internal remedy. General tonics are frequently indicated on account of the impairment of the general health due to the imperfect oxygenation of the blood and to the disturbed rest. Cod-liver oil, when tolerated, will undoubtedly give the most satisfactory results.

Local medication is also very unsatisfactory in a majority of cases. Astringents may prove useful, by limiting the amount of the discharge, and preventing the recurrence of the frequent attacks of acute inflammation to which these patients are liable, but very little permanent benefit is derived from their use. No absolute cure can be obtained except by a thorough removal of the abnormal tissue. Tannin is probably the best astringent and should be used in solution by means of a Davidson's No. 59 atomizer, for with it you will be able to reach the parts satisfactorily, without doing any damage to the neighboring organs.

The following is the formula which I prefer.

℞. Acidi carbolici, grs. ij.
Sodii biboratis, grs. vj.
Acidi tannici, grs. xx to xl.
Glycerini, ʒiv.
Aquæ, q. s. ad. ℥ij.
M. S.—To be used as a-spray twice a day.

This forms a suitable, cleansing and astringent solution, which very often gives considerable relief to the sufferers from this condition.

In a few cases, in which I have have not been allowed to operate, I have reduced the hypertrophy quite successfully by means of chromic acid. After the application of a small amount of cocaine, by means of a spray, to the naso-pharynx and oiling the nasal cavities, the acid, which has previously been fused on the end of a flat aluminum probe is passed though the nostril to the enlarged pharyngeal tonsil, where it is held in contact for a few minutes. It usually causes a very little pain and soreness, but both disappear in a short time. The applications should be repeated about every three to five days and made alternately through the opposite nostril.

The galvano-cautery may be used for the same purpose by means of a straight electrode, passed through the nose to the naso-pharynx, or by means of a bent electrode passed up behind the palate. The great objection to these two methods of treatment, is that they require the repetition of many applications, which necessarily involves a long course of treatment. They frequently cause considerable pain, and very often the results are not nearly so satisfactory as we had anticipated.

Complete removal of the growth I believe to be the only scientific treatment and should be resorted to in preference to any other. For this purpose, any number of instruments have been invented. Lennox Browne[18] prefers the finger nail of the index finger to any instrument, believing that by energetic nail scraping, he can remove the growth more thoroughly and easily, save time and prevent injury to the Eustachian orifice. Löwenberg forceps, or some modification of them, is probably used more often than any other instrument for their removal. The modification of the forceps suggested by Dr. John N. Mackenzie, of Baltimore, has proved the most satisfactory to me.

An anæsthetic should always be used with children. Chloroform, although perhaps not quite as safe an anæsthetic as ether, is preferable for the reason that the latter stimulates the out-pouring of an inconvenient amount of saliva, produces congestion of the mucous membranes and so increases the amount of hæmorrhage. When the anæsthesia is complete, the patient should be turned on his side and face, with his mouth over the edge of the table. A suitable gag, such as Hénrotin's or Goodwille's having been inserted so as to separate the teeth, the surgeon standing on the right side of and facing the patient, passes the forefinger of the left hand behind the palate into the upper pharynx, where it is held as a guide. The forceps are then passed along the anterior surface of the finger and the growth removed piece by piece, guided each time by the finger until it has been completely taken away. Care should be taken to avoid tearing the mucous membrane and seizing the posterior edge of vomer or Eustachian cushion, which, to the uneducated finger, feel like the abnormal growth. If you carefully feel each portion of the neoplasm grasped by the forceps and avoid turning them side-ways, there is very little danger of doing any damage, provided you are familiar with the normal feeling of the parts. After having removed the greater amount of the growth, small excresences may be found hanging down behind the posterior nares. These remnants should be carefully searched for and thoroughly removed for their presence obstructs nasal respiration considerably.

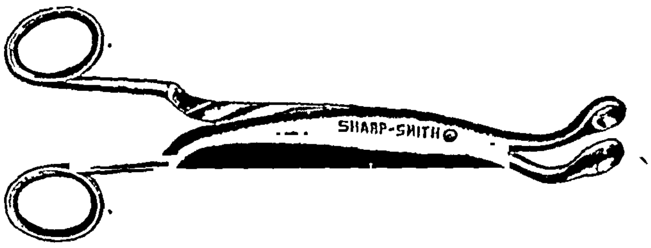

Fig. 2. Dr. Mackenzie's modification of Löwenberg's forceps.

In those cases, in which there is some difficulty in removing them by means of the instrument which I have just described, a straight nasal forceps, with cutting edges such as is used by Ingals, can be passed through the nostril to the proper point in the naso-pharynx, guided by the finger which is still retained behind the palate, and the part removed very readily.

The hæmorrhage is occasionally rather profuse, but usually ceases with the operation. With the patient in the position I have recommended, there is no necessity of swabbing or sponging out the throat as the blood can not get into the trachea, but with the patient on his back, the shoulders slightly raised and the head thrown far backward, as is recommended by some English surgeons, it is a necessity in order to prevent the blood getting into the air-passages. If undue hæmorrhage should occur, which is very rarely the case, it may become necessary to pack the posterior nares.

When the operation is completed, the mouth should be wiped out and as much blood as can, be squeezed out of the nose. It is not necessary, nor is it desirable to wash out the nose for about a week, unless there is a bad odor to the discharge, for even sprays sometimes find their way to the middle ear.

In adults, general anæsthesia is often unnecessary, it being quite sufficient to anæsthetize the parts by means of a solution of cocaine. The following is the combination which I use.

R. Atropinæ sulphatis, gr. 1-10.
Strophanthin., gr. 1-12.
Acidi carbolici, grs. v.
Olii caryophylli, gtts. v.
Cocainæ Muriatis, grs. xx.
Glycerini, ʒiv.
Aquæ q. s. ad. ℥i.

I have used this solution as a local anæsthetic for some time and find it much superior to the solutions of cocaine ordinarily used. Its advantages are the following: its strength does not deteriorate with age; it is a much stronger local anæsthetic than solutions containing the same amount of cocaine; its local effect is more lasting, while the constitutional disturbances are reduced to a minimum.

The position of the patient should be the same as that assumed for making a posterior rhinoscopy. My own custom has been to apply a small amount of the same solution by means of a spray to the naso-pharynx. A few drops can be applied to the upper part of the gland by passing a long silver canula, fastened to a hypodermic syringe, through the nose to the naso-pharynx. The applications should be repeated about once a minute until the parts are sufficiently anæsthetized. A self retaining palate retractor should be inserted and the patient may depress his own tongue by means of a tongue spatula. The forceps can be guided by the aid of the post rhinal mirror and one or two large bites taken, but after that, the blood obstructs the view and the operation will have to be completed by the sense of touch. There is frequently some pain after the two or three pieces have been removed, and the patients usually prefer to leave the remainder of the operation to a future time. In this way, it may require two or three sittings to completely remove the growth.

For the last year I have used Gottstein's new improved post-nasal curette for the removal of these vegetations, with the greatest satisfaction. It appears to me to be far superior to any other instrument used for this purpose. Chloroform or ether are unnecessary. The growth can be removed thoroughly at one sitting and usually by one stroke, when the instrument is introduced properly. Its shape is such that injury to the adjacent structures is impossible.

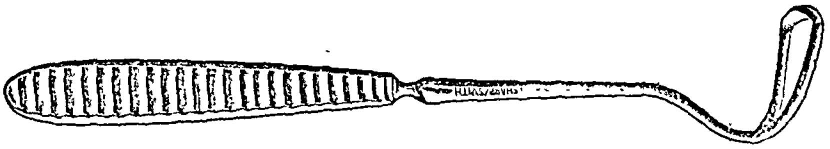
Fig. 3.—Gottstein's old naso-pharyngeal curette.

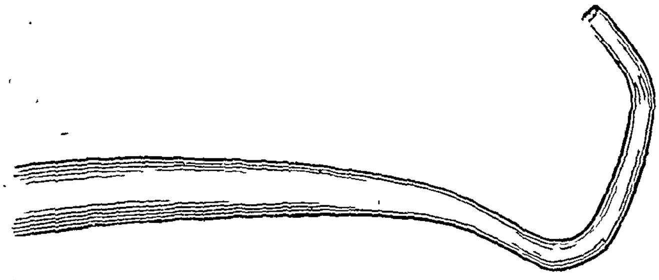
Fig. 4.—Gottstein's new naso-pharyngeal curette.

The improvement of Gottstein's new curette over the old one, is in the peculiar curvature of the cutting part of the instrument, it being especially adapted to the anatomy of the pharyngeal vault, so that the removal of any part of the pharynx other than the hypertrophy is made impossible.

An anæsthetic is not absolutely necessary, but I should always recommend the giving of nitrous oxide when it is possible, especially to children, for their memory of pain is lasting.

The child is placed upright in a surgical chair with a basin in its lap. The hands should be held by an assistant. Nitrous oxide having been administered, the curette is introduced into the mouth sideways, passed beneath the soft palate and carried up along the anterior wall of the naso-pharyngeal space until the vault is reached.

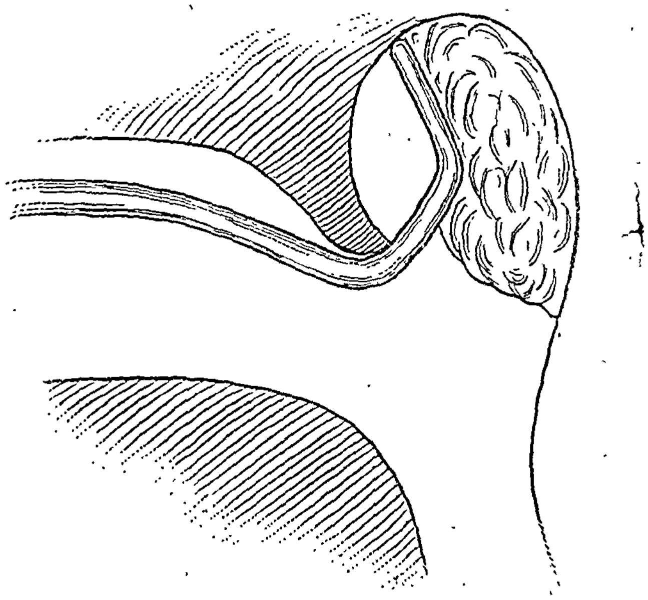
Fig. 5.—Curette in position.

Depressing the handle, the cutting edge will be brought in front of the adenoid growth and will be directed backward towards the posterior wall of the pharynx. (See Fig. 5). The patient's head held securely by the operator's left hand, the handle of the curette should be elevated so that the blade will be carred backward and downward, removing the growth with one stroke (see Fig. 6). In a few cases in which the hypertrophy is very extensive, having a broad base, you will be unable to remove the entire growth by one stroke, but the remaining portion can be removed by a subsequent one. Immediately after the removal of the instrument the patient's head should be carried forward over the basin so that the blood may escape by means of the nose and mouth.

The operation by means of this instrument is exceedingly simple and requires very little skill. The technique can be easily acquired by every careful surgeon.

There is some soreness of the parts and occasionally some difficulty in swallowing for a day or two following the operation. It is usually advisable, especially in children, to keep them in bed for a few hours, and they should be confined to the house for two or three days according to the weather. Solid food should not be allowed for the first forty-eight hours. There may be some slight elevation of temperature for a few days.

The improvement in breathing is marked, and immediate, in a majority of cases, while that of hearing and speech is farther delayed.

There is some danger of otitis media from the blood or discharges passing into the Eustachian tubes. For this reason the tympanic membrane should be carefully inspected daily until recovery has been complete. Should this accident occur, the external auditory meatus should be kept clean by means of a warm boric acid solution. Ear-ache, which is occasionally complained of, should be treated by means of counter irritation, and the continuous use of hot water and opium to the ear.

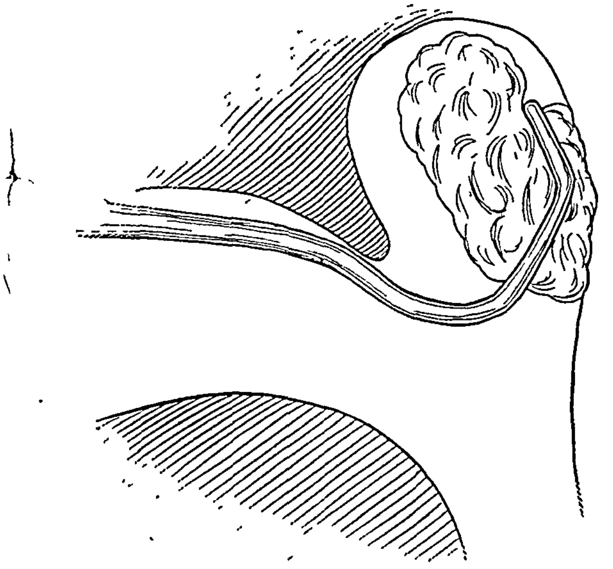

Fig. 6.—Enlargement partially removed.

In those cases in which there is some anterior obstruction, subsequent treatment should be directed towards its removal. When the hearing is not sufficiently improved, insufflation of the Eustachian tube should be performed from three to six times a week. Faulty speech is the most troublesome symptom to overcome, and is only cured by careful instruction by a competent teacher.

The patient should be taught to keep the mouth closed. For those who breathe through the mouth after all the obstructions have been removed, Löwenberg has suggested the use of a chin piece with tapes to tie over the head, thus keeping the mouth closed. The propriety of using any device of this kind is questionable, as nasal respiration is almost invariably adopted as soon as it is made possible.

In closing, allow me to say, I know of no operation in the domain of special surgery, in which the results are so satisfactory to all parties considered, as in the condition which I have just described. It should not, however, be undertaken except in those cases in which it is needed. The patient's general condition undergoes a marked change, which astonishes not only the parents and friends, but often the physician himself. I have yet to see any bad results from the operation, and when properly done, I believe it almost void of danger.

705 Venetian Building, Chicago.

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PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

BY FRANK ALLPORT, M.D.,
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PROFESSOR OF CLINICAL OPHTHALMOLOGY AND OTOLOGY IN THE UNIVERSITY OF MINNESOTA, ETC.

(*Continued from page 580.*)

Case 111.—Treated by Moss of Heidelberg. Right ear. Acute otitis; pain in right forehead and temple, chills; constipation; somnolence; impaired vision; delirium; sudden rise and fall of temperature. Death.

Autopsy.—Thrombosis right lateral sinus and internal jugular vein. Phlebitis of emissary mastoid vein.

Case 112.—Treated by Moss of Heidelberg. Right ear. Chronic otorrhœa; intense pain in right side of head. Death.

Autopsy.—Thrombosis of sigmoid flexure. Thrombosis of right lateral sinus. Lepto-meningitis.

Case 113.—Treated by Moss of Heidelberg. Right ear. Chronic otorrhœa; chills; pain in occiput; vomiting. Death.

Autopsy.—Phlebitis and thrombosis of lateral sinus. Meningitis. Cholesteatoma in mastoid cells.

Case 114.—Treated by Moss of Heidelberg. Chronic otorrhœa; pain in ear, forehead and occiput; fever; œdema of temple; headache; stupor; spasms of upper extremities. Death.

Autopsy.—Phlebitis and thrombosis of lateral and superior petrosal sinuses. Circumscribed basilar meningitis.

Case 115.—Treated by Burckhardt-Merian. Age, one. Left ear. Chronic otorrhœa; external opening made over mastoid; vomiting: delirium; nose-bleed. Death.

Autopsy.—Tubercular meningitis- Thrombosis of left lateral sinus.

Case 115.—Transactions American Otological Society, 1885. Treated by C. J. Kipp. Female, age twenty-one. Left ear. Furuncle left meatus; pain in head. Death.

Autopsy.—Inflammation of arachnoid and pia-mater. Abscess anterior portion of cerebellum. Left auditory and facial nerves imbedded in pus. Pus in mastoid cells. Slight tympanic inflammation.

Case 117.—*Medical Correspond-Blatt von Wurttemburg*, 1889. Treated by Kœbel of Stuttgart. Chronic otorrhœa; pain; facial paralysis; mastoid opened; caries of cells, antrum and tympanum; pyæmia. Death.

Autopsy.—Carious openings into middle cerebral fossa and into transverse sinus. Phlebitis and thrombus of transverse sinus.

Case 118.—*Medical Record*, July 7, 1887. Treated by Roosa of New York City. Male, age forty-one. Right ear. Acute purulent otorrhœa; meningitic symptoms; chills; temperature medium; pulse low; improvement; Wildes' incision; delirium; pyæmia. Death.

Autopsy.—Sinuses filled with dark coagula. In the pia-mater was extensive fibrino-purulent exudation. Lateral ventricles dilated and filled with blood-stained serum. Necrosis of petrous, through roof of tympanum. Lateral sinus, carious.

Case 119.—Transactions American Otological Society. Treated by J. Orne Green. Male, age twenty-five. Chronic otorrhœa: deaf; dizziness; headache; diplopia; partial paralysis; coma. Death.

Autopsy.—Abscess tempero-sphenoidal lobe. Necrosis tegmen-tympani, and sinus connecting auditory canal and cerebral cavity.

Case 120.—Treatise on the Ear, by Roosa, page 532. Treated at New York Hospital. Left ear. Chronic otorrhœa; has had mastoid abscess when young; pain; high fever. Death.

Autopsy.—Pus under dura-mater and in mastoid cells. The entire temporal bone infiltrated with pus. Drum-head gone. Malleus, incus and part of the stapes gone.

Case 121.—Treatise on the Ear, by Roosa, page 532. Treated at New York Eye and Ear Infirmary. Right ear. Acute inflammation of middle ear and meatus; discharge; pain in right side of head; delirium; retention of urine; temperature and pulse medium. Death.

Autopsy.—Right optic nerve atrophied. The meninges at base of cerebellum, and upper part of spinal cord, were covered with lymph and sero-pus. Mastoid bone infiltrated with pus. Drum-head gone. Malleus and incus gone.

Case 122.—Treatise on the Ear, by Roosa. Treated by Cooper, of New Jersey. Male, age sixty-five. Right ear. Acute purulent otorrhœa; pain behind ear and in head; stupor. Death.

Autopsy.—Dura-mater congested, and lymph at base of brain. Pus at base of brain, extending to the medulla.

Case 123.—Transactions American Otological Society. Treated by Roosa of New York City. Male, age twenty-five. Right ear. Chronic otorrhœa; pain in head and ear; profuse discharge; temperature and pulse medium; chills; pleurisy; pneumonia; pain over lateral sinus; exophthalmus. Death.

Autopsy.—Thrombosis of right internal jugular. Pus in right lateral sinus. Drum-head and ossicles gone. Right lateral sinus carious.

Case 124.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. age sixty-six. Right ear. Chronic otorrhœa; deafness on one side; went to bed as usual; next morning paralysis of one side, also ptosis; paralysis persisted for some days; became giddy; had severe chills; drowsy; delirious at intervals; face flushed; head hot; convulsions; gradually sank and died.

Autopsy.—Abscess in centre of right cerebral hemisphere.

Case 125.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age twenty. Chronic otorrhœa; head and neck rigidly curved forward, and spine curved; some rotary movements of the head; was unable to swallow. Death.

Autopsy.—Abscess in the pons varolii.

Case 126.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age twenty-two. Chronic otorrhœa; sore throat for one week, and became generally ill; discharge from ear; chills; semi-comatose condition. Death.

Autopsy.—Abscess in middle lobe.

Case 127.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age forty-one. Right ear. Chronic suppuration; paralysis of right half of face; constant pain on right side of head; drowsy; semi-comatose. Death.

Autopsy.—Abscess in the middle half of right lobe of cerebellum, communicating directly with the diseased portion of the temporal bone.

Carse 128.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton.—Male, age twenty-three. Right ear. chronic otorrhœa; caries of the temporal bone; chills; pain in the head; vomiting. Death.

Autopsy.—Abscess in the right lobe of cerebellum.

Case 129.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age twenty-five. Right ear. Chronic otorrhœa; frontal headache; vertigo; delirium; paresis of left side; coma. Death.

Autopsy.—Abscess in the middle lobe of cerebrum on right side.

Case 130.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age twenty-three. Right ear. Chronic otorrhœa; pain in right side of head and right ear; vomiting. Death.

Autopsy—Suppuration and sloughing of the middle lobe of right hemisphere.

Case 131.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age twenty. Right ear. Purulent otorrhœa; paralysis of right seventh nerve; pain in head; pain on moving neck; chills; nausea; vomiting; sweating. Death.

Autopsy.—Abscess in the cerebellum.

Case 132.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age thirteen. Chronic otorrhœa; syncope; convulsions with insensibility; pain in the head; nausea; delirium; convulsions; intense pain and cramp in left leg; coma. Death.

Autopsy.—Abscess under the posterior lobe of right hemisphere.

Case 133.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age twenty-eight. Left ear. Chronic otorrhœa; delirium; coma. Death.

Autopsy.—Abscess in anterior and middle lobe of the left hemisphere. Caries of petrous bone connecting with abscess.

Case 134.—Extract from Treatise on the Ear, by Roosa. Male, age twenty-seven. Chronic otorrhœa; pain in head; paralysis of right side of face. Death from hæmorrhage (from lateral sinus).

Autopsy.—Dura-mater inflamed. A sloughing of brain tissue. Lateral sinus inflamed and sloughy.

(To be continued.)

SYMPHYSIOTOMY.—Dr. Charles Jewett, of Brooklyn, reports a case in the *Brooklyn Medical Journal*, in which he performed the operation of symphysiotomy with successful results. This is the first report of this operation being performed in this country.

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SATURDAY, NOVEMBER 19, 1892.

THE CODE OF ETHICS, CONSTITUTION AND BY-LAWS OF THE AMERICAN MEDICAL ASSOCIATION.

At the session of the American Medical Association held in Detroit, Mich., June 7, 1892, it was

Resolved, "That the President appoint a Committee of five to whom the Code of Ethics of this Association shall be referred for such changes or amendments as they may deem it wise to recommend, if they should decide that any change is required.

Resolved, "That this committee be instructed to determine and report to this Association for action thereon at its next annual meeting, such changes in its By-Laws or Constitution as in their judgment will properly liberalize the relations of this Association to the great body of the Medical Profession."

The Committee appointed was Henry D. Holton, Chairman, of Brattleboro, Vermont; H. D. Didama, Syracuse, N. Y.; Leartus Connor, Detroit, Mich.; Daniel T. Nelson, Chicago, Ill.; and Benjamin Lee, Philadelphia.

In order to perform its duties intelligently, this Committee desires that every practitioner should study anew the Code of Ethics and Constitution and By-Laws of the American Medical Association, that each would then inform the Chairman of this Committee on the following points:

1. Do you advise any change in these documents?
2. If you advise a change, please state specifically *what that change shall be?* In answering state the section or sections you would strike out, or add to, or amend. Kindly give the exact phraseology that would best meet your views in the changes you suggest.

Should you not have the documents in question at hand you can procure them for a trifling consideration from the Publication Office of the ASSOCIATION JOURNAL, 68 Wabash Avenue, Chicago, Ill.

Please give this your earliest attention, and send your wishes to the Chairman of the Committee, Dr. Henry D. Holton, Brattleboro, Vermont, at a date not later than January 1, 1893.

Very respectfully yours,
HENRY D. HOLTON,
H. D. DIDAMA,
LEARTUS CONNOR,
DANIEL T. NELSON,
BENJAMIN LEE.

Committee on Revision of the Code of Ethics and Constitution and By-Laws of the American Medical Association.

CODE OF MEDICAL ETHICS OF THE AMERICAN MEDICAL ASSOCIATION.

(*Originally Adopted at the Adjourned Meeting of the National Medical Convention in Philadelphia, May, 1847.*)

ART. I.—*Duties of physicians to their patients.*

§ 1. A physician should not only be ever ready to obey the calls of the sick, but his mind ought also to be imbued with the greatness of his mission, and the responsibility he habitually incurs in its discharge. These obligations are the more deep and enduring, because there is no tribunal other than his own conscience to adjudge penalties for carelessness or neglect. Physicians should, therefore, minister to the sick with due impressions of the importance of their office; reflecting that the ease, the health, and the lives of those committed to their charge, depend on their skill, attention, and fidelity. They should study, also, in their deportment, so to unite *tenderness* with *firmness*, and *condescension* with *authority*, as to inspire the minds of their patients with gratitude, respect, and confidence.

§ 2. Every case committed to the charge of a physician should be treated with attention, steadiness, and humanity. Reasonable indulgence should be granted to the mental imbecility and caprices of the sick. Secrecy and delicacy, when required by peculiar circumstances, should be strictly observed; and the familiar and confidential intercourse to which physicians are admitted in their professional visits should be used with discretion, and with the most scrupulous regard to fidelity and honor. The obligation of secrecy extends beyond the period of professional services; none of the privacies of personal and domestic life, no infirmity of disposition or flaw of character observed during professional attendance should ever be divulged by the physician except when he is imperatively required to do so. The force and necessity of this obligation are indeed so great that, professional men have, under certain circumstances, been protected in their observance of secrecy by courts of justice.

§ 3. Frequent visits to the sick are in general requisite, since they enable the physician to arrive at a more perfect knowledge of the disease—to meet promptly every change which may occur, and also tend to preserve the confidence of the patient. But unnecessary visits are to be avoided, as they give useless anxiety to the patient, tend to diminish the authority of the physician, and render him liable to be suspected of interested motives.

§ 4. A physician should not be forward to make gloomy prognostications, because they savor of empiricism, by magnifying the importance of his services in the treatment or cure of the disease. But he should not fail, on proper occasions, to give to the friends of the patient timely notice of danger when it really occurs; and even to the patient himself, if absolutely necessary. This office, however, is so peculiarly alarming when executed by him, that it ought to be declined whenever it can be assigned to any other person of sufficient judgment and delicacy. For the physician should be the minister of hope and comfort to the sick; that, by such cordials to the drooping spirit, he may smooth the bed of death, revive expiring life, and counteract the depressing influence of those maladies which often disturb the tranquility of the most resigned in their last moments. The life of a sick person can be shortened not only by the acts, but also by the words or the manner of a physician. It is, therefore a sacred duty to guard himself carefully in this respect, and to avoid all things which have a tendency to discourage the patient and to depress his spirits.

§ 5. A physician ought not to abandon a patient because the case is deemed incurable; for his attendance may continue to be highly useful to the patient, and comforting to the relatives around him, even in the last period of a fatal malady, by alleviating pain and other symptoms, and by soothing mental anguish. To decline attendance under such circumstances, would be sacrificing to fanciful delicacy and mistaken liberality, that moral duty which is independent of, and far superior to, all pecuniary consideration.

§ 6. Consultations should be promoted in difficult or protracted cases, as they give rise to confidence, energy, and more enlarged views in practice.

§ 7. The opportunity which a physician not unfrequently enjoys of promoting and strengthening the good resolutions of his patients, suffering under the consequences of vicious conduct, ought never to be neglected. His counsels, or even remonstrances, will give satisfaction, not offense, if they be proffered with politeness, and evince a genuine love of virtue, accompanied by a sincere interest in the welfare of the person to whom they are addressed.

ART. II.—*Obligations of patients to their physicians.*

§ 1. The members of the medical profession, upon whom is enjoined the performance of so many important and arduous duties toward the community, and who are required to make so many sacrifices of comfort, ease, and health, for the welfare of those who avail themselves of their services, certainly have a right to expect and require, that their patients should entertain a just sense of the duties which they owe to their medical attendants.

§ 2. The first duty of a patient is to select as his medical adviser one who has received a regular professional education. In no trade or occupation do mankind rely on the skill of an untaught artist; and in medicine, confessedly the most difficult and intricate of the sciences, the world ought not to suppose that knowledge is intuitive.

§ 3. Patients should prefer a physician whose habits of life are regular, and who is not devoted to company, pleasure, or to any pursuit incompatible with his professional obligations. A patient should, also, confide the care of himself and family, as much as possible, to one physician; for a medical man who has become acquainted with the peculiarities of constitution, habits, and predispositions of those he attends, is more likely to be successful in his treatment than one who does not possess that knowledge.

A patient who has thus selected his physician should always apply for advice in what may appear to him trivial cases, for the most fatal results often supervene on the slightest accidents. It is of still more importance that he should apply for assistance in the forming stage of violent diseases; it is to a neglect of this precept that medicine owes much of the uncertainty and imperfection with which it has been reproached.

§ 4. Patients should faithfully and unreservedly communicate to their physician the supposed cause of their disease. This is the more important, as many diseases of a mental origin simulate those depending on external causes, and yet are only to be cured by ministering to the mind diseased. A patient should never be afraid of thus making his physician his friend and adviser; he should always bear in mind that a medical man is under the strongest obligations of secrecy. Even the female sex should never allow feelings of shame or delicacy to prevent their disclosing the seat, symptoms and causes of complaints peculiar to them. However commendable a modest reserve may be in the common occurrences of life, its strict observance in medicine is often attended with the most serious consequences, and a patient may sink under a painful and loathsome disease, which might have been readily prevented had timely intimation been given to the physician.

§ 5. A patient should never weary his physician with a tedious detail of events or matters, as not appertaining to his disease. Even as relates to his actual symptoms, he will convey much more real information by giving clear answers to interrogatories, than by the most minute account of his own framing. Neither should he obtrude upon his physician the details of his business nor the history of his family concerns.

§ 6. The obedience of a patient to the prescriptions of his physician should be prompt and implicit. He should never permit his own crude opinions as to their fitness to influence his attention to them. A failure in one particular may render an otherwise judicious treatment dangerous, and even fatal. This remark is equally applicable to diet, drink, and exercise. As patients become convalescent they are very apt to suppose that the rules prescribed for them may be disregarded, and the consequence, but too often, is a relapse. Patients should never allow themselves to be persuaded to take any medicine whatever, that may be recommended to them by the self-constituted doctors and doctresses who are so frequently met with, and who pretend to possess infallible remedies for the cure of every disease. However simple some of their prescriptions may appear to be, it often happens that they are productive of much mischief, and in all cases they are injurious, by contravening the plan of treatment adopted by the physician.

§ 7. A patient should, if possible, avoid even the *friendly visits of a physician* who is not attending him—and when he does receive them, he should never converse on the subject of his disease, as an observation may be made, without any intention of interference, which may destroy his confidence in the course he is pursuing, and induce him to neglect the directions prescribed to him. A patient should never send for a consulting physician without the express consent of his own medical attendant. It is of great importance that physicians should act in concert; for, although their modes of treatment may be attended with equal success when applied singly, yet conjointly they are very likely to be productive of disastrous results.

§ 8. When a patient wishes to dismiss his physician, justice and common courtesy require that he should declare his reasons for so doing.

§ 9. Patients should always, when practicable, send for their physician in the morning, before his usual hour of going out; for, by being early aware of the visits he has to pay during the day, the physician is able to apportion his time in such a manner as to prevent an interference of engagements. Patients should also avoid calling on their medical advisor unnecessarily during the hours devoted to meals or sleep. They should always be in readiness to receive the visits of their physician, as the detention of a few minutes is often of serious inconvenience to him.

§ 10. A patient should, after his recovery, entertain a just and endearing sense of the value of the services rendered him by his physician; for these are of such a character, that no mere pecuniary acknowledgement can repay or cancel them.

OF THE DUTIES OF PHYSICIANS TO EACH OTHER, AND TO THE PROFESSION AT LARGE.

ART. I.—*Duties for the support of professional character.*

§ 1. Every individual, on entering the profession, as he becomes thereby entitled to all its privileges and immunities, incurs an obligation to exert his best abilities to maintain its dignity and honor, to exalt its standing, and to extend the bounds of its usefulness. He should, therefore, observe strictly such laws as are instituted for the government of its members; should avoid all contumelious and sarcastic remarks relative to the faculty as a body; and while, by unwearied diligence, he resorts to every honorable means of enriching the science, he should entertain a due respect for his seniors, who have, by their labors, brought it to the elevated condition in which he finds it.

§ 2. It is not in accord with the interests of the public or the honor of the profession that any physician or medical teacher should examine or sign diplomas or certificates of proficiency for, or otherwise be specially concerned with, the graduation of persons whom they have good reason to believe intend to support and practice any exclusive and irregular system of medicine.

§ 3. There is no profession from the members of which greater purity of character and a higher standard of moral excellence are required, than the medical; and to attain such eminence is a duty every physician owes alike to his profession and to his patients. It is due to the latter, as without it he cannot command their respect and confidence, and to both, because no scientific attainments can compensate for the want of correct moral principles. It is also incumbent upon the faculty to be temperate in all things, for the practice of physic requires the unremitting exercise of a clear and vigorous understanding; and, on emergencies, for which no professional man should be unprepared, a steady hand, an acute eye, and an unclouded head may be essential to the well-being, and even to the life, of a fellow-creature.

§ 4. It is derogatory to the dignity of the profession to resort to public advertisements, or private cards, or handbills, inviting the attention of individuals affected with particular diseases—publicly offering advice and medicine to the poor gratis, or promising radical cures; or to publish cases and operations in the daily prints, or suffer such publications to be made; to invite laymen to be present at operations, to boast of cures and remedies, to adduce certificates of skill and success, or to perform any other similar acts. These are the ordinary practices of empirics, and are highly reprehensible in a regular physician.

§ 5. Equally derogatory to professional character is it for a physician to hold a patent for any surgical instrument or medicine; or to dispense a secret *nostrum*, whether it be the composition of exclusive property of himself or others. For, if such nostrum be of real efficacy, any concealment regarding it is inconsistant with beneficence and professional liberality; and if mystery alone give it value and importance, such craft implies either disgraceful ignorance or fraudulent avarice. It is also reprehensible for physicians to give certificates attesting the efficacy of patent or secret medicines, or in any way to promote the use of them.

ART. II.—*Professional services of physicians to each other.*

§ 1. All practitioners of medicine, their wives, and their children while under the paternal care, are entitled to the gratuitous services of any one or more of the faculty residing near them, whose assistance may be desired. A physician afflicted with disease is usually an incompetent judge of his own case; and the natural anxiety and solicitude which he experiences at the sickness of a wife, a child, or any one who, by the ties of consanguinity, is rendered peculiarly dear to him, tend to obscure his judgment, and produce timidity and irresolution in his practice. Under such circumstances, medical men are peculiarly dependent upon each other, and kind offices and professional aid should always be cheerfully and gratuitously afforded. Visits ought not, however, to be obtruded officiously; as such unasked civility may give rise to embarrassment, or interfere with that choice on which confidence depends. But, if a distant member of the faculty, whose circumstances are affluent, request attendance, and an honorarium be offered, it should not be declined; for no pecuniary obligation ought to be imposed, which the party receiving it would not wish to incur.

ART. III.—*Of the duties of physicians as respects vicarious offices.*

§ 1. The affairs of life, the pursuit of health, and the various accidents and contingencies to which a medical man is peculiarly exposed, sometimes require him temporarily to withdraw from his duties to his patients, and to request some of his professional brethren to officiate for him. Compliance with this request is an act of courtesy, which should always be performed with the utmost consideration for the interest and character of the family physician, and when exercised for a short period all the pecuniary obligations for such services should be awarded to him. But if a member of the profession neglect his business in quest of pleasure and amusement, he cannot be considered as entitled to the advantages of the frequent and long-continued exercise of this fraternal courtesy without awarding to the physician who officiates the fees arising from the discharge of his professional duties.

In obstetrical and important surgical cases, which give rise to unusual fatigue, anxiety and responsibility, it is just that the fees accruing therefrom should be awarded to the physician who officiates.

ART. IV.—*Of the duties of physicians in regard to consultations.*

§ 1. A regular medical education furnishes the only presumptive evidence of professional abilities and acquirements, and ought to be the only acknowledged right of an individual to the exercise and honors of his profession. Nevertheless, as in consultations the good of the patient is the sole object in view, and this is often dependent on personal confidence, no intelligent regular practitioner, who has a license to practice from some medical board of known and acknowledged respectability, recognized by the Association, and who is in good moral and professional standing in the place in which he resides, should be fastidiously excluded from fellowship, or his aid refused in consultation, when it is requested by the patient. But no one can be considered as a regular practitioner or a fit associate in consultation, whose practice is based on an exclusive dogma, to the rejection of the accumulated experience of the profession, and of the aids actually furnished by anatomy, physiology, pathology and organic history.

§ 2. In consultations, no rivalship or jealousy should be indulged; candor, probity, and all due respect should be exercised toward the physician having charge of the case.

§ 3. In consultations, the attending physician should be the first to propose the necessary questions to the sick; after which the consulting physician should have the opportunity to make such further inquiries of the patient as may be necessary to satisfy him of the true character of the case. Both physicians should then retire to a private place for deliberation; and the one first in attendance should communicate the directions agreed upon to the patient or his friends, as well as any opinions which it may be thought proper to express. But no statement or discussion of it should take place before the patient or his friends, except in the presence of all the faculty attending, and by their common consent; and no *opinions* or *prognostications* should be delivered which are not the result of previous deliberation and concurrence.

§ 4. In consultations, the physician in attendance should deliver his opinion first; and when there are several consulting, they should deliver their opinions in the order in which they have been called. No decision, however, should restrain the attending physician from making such variations in the mode of treatment as any subsequent unexpected change in the character of the case may demand. But such variation, and the reasons for it, ought to be carefully detailed at the next meeting in consultation. The same privilege belongs also to the consulting physician if he is sent for in an emergency, when the regular attendant is out of the way, and similar explanations must be made by him at the next consultation.

§ 5. The utmost punctuality should be observed in the visits of physicians when they are to hold consultations together, and this is generally practicable, for society has been considerate enough to allow the plea of a professional engagement to take precedence of all others, and to be an ample reason for the relinquishment of any present occupation. But as professional engagements may sometimes interfere, and delay one of the parties, the physician who first arrives should wait for his associate a reasonable period, after which the consultation should be considered as postponed to a new appointment. If it be the attending physician who is present, he will, of course, see the patient and prescribe; but if it be the consulting one, he should retire, except in case of emergency, or when he has been called from a considerable distance, in which latter case he may examine the patient, and give his opinion *in writing* and *under seal*, to be delivered to his associate.

§ 6. In consultations, theoretical discussions should be avoided, as occasioning perplexity and loss of time. For there may be much diversity of opinion concerning speculative points, with perfect agreement in those modes of practice which are founded, not on hypothesis, but on experience and observation.

§ 7. All discussions in consultation should be held as secret and confidential. Neither by words nor manner should any of the parties to a consultation assert or insinuate that any part of the treatment pursued did not receive his assent. The responsibility must be equally divided between the medical attendants—they must equally share the credit of success as well as the blame of failure.

§. 8. Should an irreconcilable diversity of opinion occur when several physicians are called upon to consult together, the opinion of the majority should be considered as decisive; but if the numbers be equal on each side, then the decision should rest with the attending physician. It may, moreover, sometimes happen that two physicians cannot agree in their views of the nature of a case, and the treatment to be pursued. This is a circumstance much to be deplored, and should always be avoided, if possible, by mutual concessions, as far as they can be justified by a conscientious regard for the dictates of judgment. But in the event of its occurrence, a third physician should, if practicable, be called to act as umpire; and, if circumstances prevent the adoption of his course, it must be left to the patient to select the physician in which he is most willing to confide. But, as every physician relies upon the rectitude of his judgment, he should, when left in the minority, politely and consistently retire from any further deliberation in the consultation, or participation in the management of the case.

§ 9. As circumstances sometimes occur to render a *special consultation* desirable, when the continued attendance of two physicians might be objectionable to the patient, the member of the faculty whose assistance is required in such cases should sedulously guard against all future unsolicited attendance. As such consultations require an extraordinary portion of both time and attention, at least a double honorarium may be reasonably expected.

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ART. V.—*Duties of physicians in cases of interference.*

§ 1. Medicine is a liberal profession, and those admitted into its ranks should found their expectations of practice upon the extent of their qualifications, not on intrigue or artifice.

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§ 3. The same circumspection and reserve should be observed when, from motives of business or friendship, a physician is prompted to visit an individual who is under the direction of another practitioner. Indeed, such visits should be avoided, except under peculiar circumstances; and when they are made, no particular inquiries should be instituted relative to the nature of the disease, or the remedies employed, but the topics of conversation should be as foreign to the case as circumstances will admit.

§ 4. A physician ought not to take charge of or prescribe for a patient who has recently been under the care of another member of the faculty in the same illness, except in cases of sudden emergency, or in consultation with the physician previously in attendance, or when the latter has relinquished the case, or been regularly notified that his services are no longer desired. Under such circumstances, no unjust and illiberal insinuations should be thrown out in relation to the conduct or practice previously pursued, which should be justified so far as candor and regard for truth and probity will permit; for it often happens that patients become dissatisfied when they do not experience immediate relief, and, as many diseases are naturally protracted, the want of success, in the first stage of treatment, affords no evidence of a lack of professional knowledge and skill.

§ 5. When a physician is called to an urgent case, because the family attendant is not at hand, he ought, unless his assistance in consultation be desired, to resign the care of the patient to the latter immediately on his arrival.

§ 6. It often happens in case of sudden illness, or of recent accidents and injuries, owing to the alarm and anxiety of friends, that a number of physicians are simultaneously sent for. Under these circumstances, courtesy should assign the patient to the first who arrives, who should select from those present any additional assistance that he may deem necessary. In all such cases, however, the practitioner who officiates should request the family physician, if there be one, to be called, and, unless his further attendance be requested, should resign the case to the latter on his arrival.

§ 7. When a physician is called to the patient of another practitioner, in consequence of the sickness or absence of the latter, he ought, on the return or recovery of the regular attendant and with the consent of the patient, to surrender the case.

[The expression, "patient of another practitioner," is understood to mean a patient who may have been under the charge of another practitioner at the time of the attack of sickness, or departure from home of the latter, or who may have called for his attendance during his absence or sickness, or in any other manner given it to be understood that he regarded the said physician as his regular medical attendant.]

§ 8. A physician, when visiting a sick person in the country, may be desired to see a neighboring patient who is under the regular direction of another physician, in consequence of some sudden change or aggravation of symptoms. The conduct to be pursued on such an occasion is to give advice adapted to present circumstances; to interfere no further than is absolutely necessary with the general plan of treatment; to assume no future direction unless it be expressly desired; and, in this last case, to request an immediate consultation with the practitioner previously employed.

§ 9. A wealthy physician should not give advice *gratis* to the affluent; because his doing so is an injury to his professional brethren. The office of a physician can never be supported as an exclusively beneficent one; and it is defrauding, in some degree, the common funds for its support, when fees are dispensed with which might justly be claimed.

§ 10. When a physician who has been engaged to attend a case of midwifery is absent, and another is sent for, if delivery is accomplished during the attendance of the latter, he is entitled to the fee, but should resign the patient to the practitioner first engaged.

ART. VI.—*Of differences between physicians.*

§ 1. Diversity of opinion and opposition of interest may, in the medical as in other professions, sometimes occasion controversy and even contention. Whenever such cases unfortunately occur, and cannot be immediately terminated, they should be referred to the arbitration of a sufficient number of physicians or a *court-medical.*

§ 2. As peculiar reserve must be maintained by physicians toward the public, in regard to professional matters, and as there exist numerous points in medical ethics and etiquette through which the feelings of medical men may be painfully assailed in their intercourse with each other, and which cannot be understood or appreciated by general society, neither the subject-matter of such differences nor the adjudication of the arbitrators should be made public, as publicity in a case of this nature may be personally injurious to the individuals concerned, and can hardly fail to bring discredit on the faculty.

ART. VII.—*Of pecuniary acknowledgments.*

Some general rules should be adopted by the faculty, in every town or district, relative to *pecuniary acknowledgments* from their patients; and it should be deemed a point of honor to adhere to these rules with as much uniformity as varying circumstances will admit.

OF THE DUTIES OF THE PROFESSION TO THE PUBLIC, AND OF THE OBLIGATIONS OF THE PUBLIC TO THE PROFESSION.

ART. I.—*Duties of the profession to the public.*

§ 1. As good citizens, it is the duty of physicians to be ever vigilant for the welfare of the community, and to bear their part in sustaining its institutions and burdens; they should also be ever ready to give counsel to the public in relation to matters especially appertaining to their profession, as on subjects of medical police, public hygiene, and legal medicine, It is their province to enlighten the public in regard to quarantine regulations; the location, arrangement, and dietaries of hospitals, asylums, schools, prisons, and similar institutions; in relation to the medical police of towns, as drainage, ventilation, etc.; and in regard to measures for the prevention of epidemic and contagious diseases; and when pestilence prevails, it is their duty to face the danger, and to continue their labors for the alleviation of the suffering, even at the jeopardy of their own lives.

§ 2. Medical men should also be always ready, when called on by the legally constituted authorities, to enlighten coroners' inquests and courts of justice on subjects strictly medical—such as involve questions relating to sanity, legitimacy, murder by poisons or other violent means, and in regard to the various other subjects embraced in the science of Medical Jurisprudence. But in these cases, and especially where they are required to make a *post-mortem* examination, it is just, in consequence of the time, labor, and skill required, and the responsibility and risk they incur, that the public should award them a proper honorarium.

§ 3. There is no profession by the members of which eleemosynary services are more liberally dispensed than the medical, but justice requires that some limits should be placed to the performance of such good offices. Poverty, professional brotherhood, and certain of the public duties referred to in the first section of this article, should always be recognized as presenting valid claims for gratuitous services; but neither institutions endowed by the public or by rich individuals, societies for mutual benefit, for the insurance of lives or for analogous purposes, nor any profession or occupation, can be admitted to possess such privilege. Nor can it be justly expected of physicians to furnish certificates of inability to serve on juries, to perform militia duty, or to testify to the state of health of persons wishing to insure their lives, obtain pensions, or the like, without a pecuniary acknowledgement. But to individuals in indigent circumstances, such professional services should always be cheerfully and freely accorded.

§ 4. It is the duty of physicians, who are frequent witnesses of the enormities committed by quackery, and the injury to health and even destruction of life caused by the use of quack medicines, to enlighten the public on these subjects, to expose the injuries sustained by the unwary from the devices and pretensions of artful empirics and imposters. Physicians ought to use all the influence which they may possess, as professors of Colleges of Pharmacy, and by exercising their option in regard to the shops to which their prescriptions shall be sent, to discourage druggists and apothecaries from vending quack or secret medicines, or from being in any way engaged in their manufacture or sale

ART. II.—*Obligations of the public to physicians.*

§ 1. The benefits accruing to the public, directly and indirectly, from the active and unwearied beneficence of the profession, are so numerous and important, that physicians are justly entitled to the utmost consideration and respect from the community. The public ought likewise to entertain a just appreciation of medical qualifications; to make a proper discrimination between true science and the assumptions of ignorance and empiricism; to afford every encouragement and facility for the acquisition of medical education—and no longer to allow the statute-books to exhibit the anomaly of exacting knowledge from physicians, under a liability to heavy penalties, and of making them obnoxious to punishment for resort to the only means of obtaining it.

EXPLANATORY DECLARATIONS.

WHEREAS, Persistent misrepresentations have been and still are being made concerning certain provisions of the Code of Ethics of this Association, by which many in the community, and some even in the ranks of the profession are led to believe those provisions exclude persons from professional recognition simply because of differences of opinions or doctrines; therefore

1. *Resolved*, That clause first, of Art. IV, in the National Code of Medical Ethics, is not to be interpreted as excluding from professional fellowship, on the ground of differences in doctrine or belief, those who in other respects are entitled to be members of the regular medical profession. Neither is there any other article or clause of the said Code of Ethics that interferes with the exercise of the most perfect liberty of individual opinion and practice.

2. *Resolved*, That it constitutes a voluntary disconnection or withdrawal from the medical profession proper, to assume a name indicating to the public a sectarian, or exclusive system of practice, or to belong to an association or party antagonistic to the general medical profession.

3. *Resolved*, That there is no provision in the National Code of Medical Ethics in any wise inconsis- with the broadest dictates of humanity, and that the article of the Code which relates to consultations cannot be correctly interpreted as interdicting, under any circumstances, the rendering of professional services whenever there is a pressing or immediate need of them. On the contrary, to meet the emergencies occasioned by disease or accident, and to give a helping hand to the distressed without unnecessary delay is a duty fully enjoined on every member of the profession, both by the letter and the spirit of the entire Code.

But no such emergencies or circumstances can make it necessary or proper to enter into formal professional consultations with those who have voluntarily disconnected themselves from the regular medical profession, in the manner indicated by the preceding resolution.

N. S. DAVIS, of Chicago,
A. Y. P. GARNETT, of Washington,
H. F. CAMPBELL, of Augusta, Ga.,
AUSTIN FLINT, of New York,
J. B. MURDOCK, of Pittsburgh.

On motion of Dr. Brodie, the resolutions were unanimously adopted.

On motion of Dr. Keller, it was unanimously agreed that the resolutions be added as an explanatory addendum in all future publications of the Code.

CONSTITUTION AND BY-LAWS OF THE AMERICAN MEDICAL ASSOCIATION.

(Revised to March 28, 1891.)

PLAN OF ORGANIZATION FOR A NATIONAL MEDICAL ASSOCIATION.

WHEREAS, The Medical Convention, held in the City of New York, in May, 1846, have declared it expedient "for the medical profession of the United States to institute a National Medical Association;" and,

Inasmuch as an institution so conducted as to give frequent, united and emphatic expression to the views and aims of the medical profession in this country, must at all times have a beneficial influence, and supply more efficient means than have hitherto been available here for cultivating and advancing medical knowledge; for elevating the standard of medical education; for promoting the usefulness, honor, and interests of the medical profession; for enlightening and directing public opinion in regard to the duties, responsibilities, and requirements of medical men; for exciting and encouraging emulation and concert of action in the profession, and for facilitating and fostering friendly intercourse between those who are engaged in it: therefore, be it

Resolved, In behalf of the medical profession of the United States, that the members of the Medical Convention, held in Philadelphia, in May, 1847, and all others who, in pursuit of the objects above mentioned, are to unite with or succeed them, constitute a National Medical Association; and that for the organization and management of the same, they adopt the following *Regulations:*[1]

I.—TITLE OF THE ASSOCIATION.

This institution shall be known and distinguished by the name and title of "The American Medical Association."

II.—MEMBERS.

The members of this institution shall collectively represent and have cognizance of the common interests of the medical profession in every part of the United States, and shall hold their appointment to membership either as delegates from local institutions, as members by invitation, as permanent members, or members by application.

The *Delegates* shall receive their appointment from permanently organized State medical societies, and such county and district medical societies as are recognized by representation in their respective State societies, and from the medical department of the Army and Navy of the United States, and the Marine Hospital Service of the United States.

Each delegate shall hold his appointment for one year, and until another is appointed to succeed him. and shall participate in all the business and affairs of the Association.

Each State, county and district medical society entitled to representation, shall have the privilege of sending to the Association one delegate for every ten of its regular resident members, and one for every additional fraction of more than half that number. *Provided*, however, that the number of delegates from any particular State, Territory, county, city or town shall not exceed the ratio of one in ten of the resident physicians who may have signed the Code of Ethics of this Association. The Medical Staffs of the Army and Navy shall be entitled to four delegates each. The Marine-Hospital Service of the United States shall be entitled to one delegate.

No individual who shall be under sentence of expulsion or suspension from any State or local medical society of which he may have been a member, or whose name shall have been, for non.payment of dues, dropped from the rolls of the same, shall be received as a delegate to this Association, or be allowed any of the privileges of a member, until he shall have been relieved from the said sentence or disability by such State or local Society, or shall have paid up all arrears of membership; nor shall any person not a member and supporter of a local medical society, where such a one exists, be eligible to membership in the American Medical Association

No one expelled from this Association shall at any time thereafter be received as a delegate or member, unless by a three-fourths vote of the members present at the meeting to which he is sent, or at which he is proposed.

Members by Invitation shall consist of practitioners of reputable standing from sections of the United States not otherwise represented at the meeting. They shall receive their appointment by invitation of the meeting, after an introduction from, and being vouched for by, at least three of the members present, or three of the absent permanent members. They shall hold their connection with the Association until the close of the annual session at which they are received, and shall be entitled to participate in all its affairs, as in the case of delegates, except the right to vote.

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[1] Revised to date.

The *Permanent Members* shall consist of all those who have served in the capacity of delegates, and of such other members as may receive the appointment by unanimous vote, and shall continue such so long as they remain in good standing in the body from which they were sent as delegates, and comply with the requirements of the By-laws of the Association. Permanent members shall at all times be entitled to attend the meetings, and participate in the affairs of the Association, so long as they shall continue to conform to its regulations, but without the right of voting; and when not in attendance, they shall be authorized to grant letters of introduction to reputable practitioners of medicine residing in their vicinity, who may wish to participate in the business of the meeting, as provided for members by invitation.

Members by Application shall consist of such members of the State, county and district medical societies entitled to representation in this Association as shall make application for admission, in writing, to the Treasurer, and accompany said application with a certificate of good standing, signed by the President and Secretary of the society of which they are members, and the amount of the annual fee, five dollars. They shall have their names upon the roll, and have all the rights and privileges accorded to permanent members, and shall retain their membership on the same terms.

Every member elect, prior to the permanent organization of the annual meeting, or before voting on any question after the meeting has been organized, must exhibit his credentials to the proper committee, and sign these regulations, inscribing his name and address in full, specifying in what capacity he attends, and, if a delegate, the title of the institution from which he has received his appointment.

III.—MEETINGS.

The regular meetings of the Association shall be held annually. The place of meeting shall be determined, with the time of meeting for each next successive year, by vote of the Association.

IV.—OFFICERS.

The officers of the Association shall be a President, four Vice-Presidents, one Permanent and one Assistant Secretary, a Treasurer, and Librarian. They shall be nominated by a special committee of one member from each State represented at the meeting, and shall be elected by vote on a general ticket.

Each officer except the Permanent Secretary, shall hold his appointment for one year, and until another is elected to succeed him. The Permanent Secretary shall hold his appointment until removed by death, resignation, or a vote of two-thirds of the members present at a regular annual meeting.

The President and Vice-Presidents shall assume the functions of their respective offices at the beginning of the annual meeting next succeeding their election; all other officers shall enter upon their duties immediately after their election.

The President shall preside at the meetings, preserve order and decorum in debate, give a casting vote when necessary, and perform all the other duties that custom and parliamentary usage may require.

The Vice-presidents, when called upon, shall assist the President in the performance of his duties, and during the absence, or at the request of the President, one of them shall officiate in his place.

The Permanent Secretary shall record the minutes and authenticate the proceedings; give due notice of the time and place of each next ensuing annual meeting; notify all members of committees of their appointment, and of the duties assigned to them; hold correspondence with other permanently organized medical societies, both domestic and foreign: and carefully preserve the archives and unpublished transactions of the Association.

The Assistant Secretary shall aid the Permanent Secretary in recording and authenticating the proceeding of the Association; serve as a member of the Committee of Arrangements, and perform all the duties of Permanent Secretary temporarily whenever that office shall be vacant, either by death, resignation, or removal.

The Treasurer shall have the immediate charge and management of the funds and property of the Association. He shall give to the Board of Trustees bonds for the safe keeping and proper use and disposal of his trust. And through the same Board he shall present his accounts, duly authenticated, at every regular meeting.

The Librarian shall receive and preserve all the property in books, pamphlets, journals, and manuscripts presented to or acquired by the Association, record their titles in a book prepared for the purpose and acknowledge the receipt of the same.

V.—STANDING COMMITTEES.

The Committee of Arrangments shall, if no sufficient reasons prevent, be mainly composed of seven members, of whom the Assistant Secretary shall be one, residing in the place at which the Association is to hold its next annual meeting; and shall be required to provide suitable accommodations for the meeting, to verify and report upon the credentials of membership, to receive and announce all essays and memoirs voluntarily communicated, either by members of the Association, or by others through them, and to determine the order in which such papers are to be read and considered.

The Board of Trustees shall consist of nine members, three of whom shall be elected annually, on the nomination of the Nominating Committee, and shall serve for three years. It shall be the duty of this Board to provide for and superintend the publication and distribution of all such proceedings, transactions, and memoirs of the Association as may be ordered to be published, in such manner as the Association may direct, and in doing this it shall have authority to appoint an editor and such assistants, and determine their salaries, and procure and control such materials as may be necessary for the accomplishment of the work assigned to it. To further facilitate its work, it shall be the duty of the Secretaries of the Association, and of the several sections during each annual meeting, or as soon thereafter as practicable, to deliver to the Board, or such editor or agent as it shall appoint, all such records of proceedings, reports, addresses, papers and other documents as may have been ordered for publication either in the general sessions or in the Sections. All moneys received by the Board of Trustees, or its agents, resulting from the discharge of the duties assigned them, must be paid to the Treasurer of the Association, and all orders on the Treasurer for disbursements of money in any way connected with the work of publication, must be endorsed by the President of the Board of Trustees. It shall be the further duty of the said Board of Trustees to hold the official bond of the Treasurer for the faithful execution of his office, to annually audit and authenticate his accounts, and present a statement of the same in its annual report to the Association during the year, the number of copies still on hand, and the amount of all other property belonging to the Association, under its control, with such suggestions as it may deem necessary.

VI.—FUNDS AND APPROPRIATIONS.

Funds shall be raised by the Association for meeting its current expenses and awards from year to year, but never with the view of creating a permanent income from investments. Funds may obtained by an equal assessment of not more than ten dollars annually, on each of the delegates and permanent members; by voluntary contributions for specific objects; and by the sale and disposal of publications, or of works prepared for publication.

The funds may be appropriated for defraying the expenses of the Permanent Secretary in maintaining the necessary correspondence of the Association; for publication; for enabling the Standing Committees to fulfill their respective duties, conduct their correspondence, and procure the materials necessary for the completion of their stated annual reports; for the encouragement of scientific investigation by prizes and awards of merit; and for defraying the expenses incidental to specific investigations under the instruction of the Association, where such investigations have been accompanied with an order on the Treasurer to supply the funds necessary for carrying them into effect.

VII.—THE SECTIONS AND GENERAL BUSINESS COMMITTEE.

That each Section of this Association shall elect an Executive Committee of three members, who shall be chosen from among those who have been in attendance upon the sessions of the Section for at least two years; to serve one, two, and three years respectively; and that thereafter the retiring Chairman of the Section shall take the place upon the Executive Committee of the retiring member of the Committee. It shall be the duty of the Executive Committee, in conjunction with the Chairman and Secretary, to give especial attention to the interests of their own Section.

These Executive Committees of the Sections so formed shall constitute the General Business Committee of the Association. They shall hold daily meetings during the sessions of the Association, and all matters of business not provided for by the Committee of Arrangements, the Board of Trustees, the Judicial Council, the Committee of American Medical Necrology and Special Committees shall be referred to them without debate.

It shall be the duty of the General Business Committee to give especial attention to the interests of the Association, and to promote the welfare of the various sections; to consider all matters of business referred to it by the Association and report upon them at the earliest possible moment, when the Association may adopt or reject the report as it may deem best.

All Sections or parts of Sections of the Constitution or By-Laws of the Association not in harmony with this amendment are hereby repealed.

VIII.—PROVISION FOR AMENDMENT.

No amendment or alteration shall be made in any of these articles, except at the annual meeting next subsequent to that at which such amendment or alteration may have been proposed; and then only by the voice of three-fourths of all the delegates in attendance.

Provided, however, that when an amendment is is properly under consideration, and an amendment is offered thereto, germane to the subject, it shall be in order, and if adopted, shall have the same standing and force as if proposed at the preceding meeting meeting of the Association.

BY-LAWS.

I.—ORDER OF BUSINESS.

The order of business at the annual meetings of the American Medical Association shall at all times be subject to the vote of three-fourths of all the members in attendance; and, until permanently altered, except when for a time suspended, it shall be as follows, namely:

1. The calling of the meeting to order by the Pres-

ident elected the preceding year, or, in his absence' by one of the Vice-Presidents.

2. The report of the Committee of Arrangements on the credentials of members, after the latter have registered their names and addresses, and the titles of the institutions which they represent.

3. The reception of members by invitation.

4. The election of permanent members.

5. The reading of notes from absentees.

6. The hearing of the annual address of the President.

7. The reception of the reports of all special committees and voluntary communications, and their reference to the appropriate Sections.

8. The appointment of the committee of one from each State represented, to nominate officers of the Association, and to fill the standing committees.

9. The reading and consideration of the reports of Standing Committees, of Publication, on Prize Essays, and of Chairmen of Sections.

10. Resolutions introducing new business, and instructions to the permanent committees.

11. The selection of the next place of meeting.

12. The Report of the Nominating Committee, and the election of officers of the Association.

13. Reports from the several Sections.

14. Reading of the minutes by the Secretary.

15. Unfinished and miscellaneous business.

16. Adjournment.

II.—SECTIONS.

The general meetings of the Association shall be restricted to the morning sessions; and the afternoon sessions, commencing at three o'clock, shall be devoted to the hearing of reports and papers and their consideration, in the following *Sections*:—

1. Practical Medicine and Physiology.
2. Obstetrics and Diseases of Women.
3. Surgery and Anatomy.
4. State Medicine.
5. Ophthalmology.
6. Diseases of Children.
7. Dental and Oral Surgery.
8. Medical Jurisprudence and Neurology.
9. Dermatology and Syphilis.
10. Laryngology and Otology.
11. Materia Medica and Pharmacy.

On the second day of each annual meeting each Section shall nominate its own officers to serve for the next ensuing year, their duties to commence with the close of the annual meeting at which they are nominated, and to continue until their successors are appointed.

The Section on State Medicine shall be composed of one member from each State, one from the Army and one from the Navy of the United States, representing, as far as practicable, the State Boards of Health. The officers of this Section to be also designated by the Committee on Nominations.

The Chairman of each Section shall prepare an address on the recent advances in the branches belonging to his Section, including such suggestions in regard to improvements or methods of work as he may regard important, and present on the first day of the annual session the same to the Section over which he presides. The reading of such address not to occupy more than forty minutes.

It shall be the duty of every member of the Association who proposes to present a paper or report to any one of the Sections, to forward either the paper, or a *title* indicative of its contents, and its *length*, to the Chairman of the Committee of Arrangements at least one month before the annual meeting at which the paper or report is to be read. It shall also be the duty of the Chairman and Secretary of each Section to communicate the same information to the Chairman of the Committee of Arrangements concerning such papers and reports as may come into their possession or knowledge, for their respective Sections, the same length of time before the annual meeting. And the Committee of Arrangements shall determine the order of reading or presentation of all such papers, and announce the same in the form of a programme for the use of all members attending the annual meeting. Such programme shall also contain the rules specified in the By-laws and Ordinances concerning the consideration and disposal of all papers in the Sections.

No paper shall be read before either of the Sections, the reading of which occupies more than twenty minutes. Such papers shall be referred by the Section to subcommittees specially appointed for their examination. The subcommittees shall be allowed thirty days for their examination; at the end of which time they shall forward the papers to the Board of Trustees, with such recommendations as they may deem proper. The authors of such papers, however, may read abstracts before the Section within the allotted twenty minutes. No member shall address the Section more than once upon the same subject, nor speak longer than fifteen minutes without unanimous consent.

All papers presented directly to the Association, and other matters, may, at the discretion of the Association, be referred to the various Sections for their consideration and report.

III.—STANDING COMMITTEES.

The following are the Standing Committees of the Association, to be filled by the Committee on Nominations, and to report at the next annual meeting subsequent to their appointment, namely: Committee of Arrangements, Board of Trustees, and Committee on American Medical Necrology.

The *Board of Trustees* shall append to each volume of the *Transactions* hereafter published, a copy of the Constitution, By-laws and Code of Ethics of the tion and distribution of all such proceedings, transactions, and memoirs of the Association as may be ordered to be published, in such manner as the Association may direct, and in doing this it shall have authority to appoint an editor and such assistants, and determine their salaries, and procure and control such materials as may be necessary for the accomplishment of the work assigned to it. To further facilitate its work, it shall be the duty of the Secretaries of the Association, and of the several sections during each annual meeting, or as soon thereafter as practicable, to deliver to the Board, or such editor or agent as it shall appoint, all such records of proceedings, reports, addresses, papers and other documents as may have been ordered for publication either in the general sessions or in the Sections. All moneys received by the Board of Trustees, or its agents, resulting from the discharge of the duties assigned them, must be paid to the Treasurer of the Association, and all orders on the Treasurer for disbursements of money in any way connected with the work of publication, must be endorsed by the President of the Board of Trustees. It shall be the further duty of the said Board of Trustees to hold the official bond of the Treasurer for the faithful execution of his office, to annually audit and authenticate his accounts, and present a statement of the same in its annual report to the Association during the year, the number of copies still on hand, and the amount of all other property belonging to the Association, under its control, with such suggestions as it may deem necessary.

VI.—FUNDS AND APPROPRIATIONS.

Funds shall be raised by the Association for meeting its current expenses and awards from year to year, but never with the view of creating a permanent income from investments. Funds may obtained by an equal assessment of not more than ten dollars annually, on each of the delegates and permanent members; by voluntary contributions for specific objects; and by the sale and disposal of publications, or of works prepared for publication.

The funds may be appropriated for defraying the expenses of the Permanent Secretary in maintaining the necessary correspondence of the Association; for publication; for enabling the Standing Committees to fulfill their respective duties, conduct their correspondence, and procure the materials necessary for the completion of their stated annual reports; for the encouragement of scientific investigation by prizes and awards of merit; and for defraying the expenses incidental to specific investigations under the instruction of the Association, where such investigations have been accompanied with an order on the Treasurer to supply the funds necessary for carrying them into effect.

VII.—THE SECTIONS AND GENERAL BUSINESS COMMITTEE.

That each Section of this Association shall elect an Executive Committee of three members, who shall be chosen from among those who have been in attendance upon the sessions of the Section for at least two years; to serve one, two, and three years respectively; and that thereafter the retiring Chairman of the Section shall take the place upon the Executive Committee of the retiring member of the Committee. It shall be the duty of the Executive Committee, in conjunction with the Chairman and Secretary, to give especial attention to the interests of their own Section.

These Executive Committees of the Sections so formed shall constitute the General Business Committee of the Association. They shall hold daily meetings during the sessions of the Association, and all matters of business not provided for by the Committee of Arrangements, the Board of Trustees, the Judicial Council, the Committee of American Medical Necrology and Special Committees shall be referred to them without debate.

It shall be the duty of the General Business Committee to give especial attention to the interests of the Association, and to promote the welfare of the various sections; to consider all matters of business referred to it by the Association and report upon them at the earliest possible moment, when the Association may adopt or reject the report as it may deem best.

All Sections or parts of Sections of the Constitution or By-Laws of the Association not in harmony with this amendment are hereby repealed.

VIII.—PROVISION FOR AMENDMENT.

No amendment or alteration shall be made in any of these articles, except at the annual meeting next subsequent to that at which such amendment or alteration may have been proposed; and then only by the voice of three-fourths of all the delegates in attendance.

Provided, however, that when an amendment is is properly under consideration, and an amendment is offered thereto, germane to the subject, it shall be in order, and if adopted, shall have the same standing and force as if proposed at the preceding meeting meeting of the Association.

BY-LAWS.

I.—ORDER OF BUSINESS.

The order of business at the annual meetings of the American Medical Association shall at all times be subject to the vote of three-fourths of all the members in attendance; and, until permanently altered, except when for a time suspended, it shall be as follows, namely:

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ident elected the preceding year, or, in his absence, by one of the Vice-Presidents.

2. The report of the Committee of Arrangements on the credentials of members, after the latter have registered their names and addresses, and the titles of the institutions which they represent.

3. The reception of members by invitation.

4. The election of permanent members.

5. The reading of notes from absentees.

6. The hearing of the annual address of the President.

7. The reception of the reports of all special committees and voluntary communications, and their reference to the appropriate Sections.

8. The appointment of the committee of one from each State represented, to nominate officers of the Association, and to fill the standing committees.

9. The reading and consideration of the reports of Standing Committees, of Publication, on Prize Essays, and of Chairmen of Sections.

10. Resolutions introducing new business, and instructions to the permanent committees.

11. The selection of the next place of meeting.

12. The Report of the Nominating Committee, and the election of officers of the Association.

13. Reports from the several Sections.

14. Reading of the minutes by the Secretary.

15. Unfinished and miscellaneous business.

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3. Surgery and Anatomy.
4. State Medicine.
5. Ophthalmology.
6. Diseases of Children.
7. Dental and Oral Surgery.
8. Medical Jurisprudence and Neurology.
9. Dermatology and Syphilis.
10. Laryngology and Otology.
11. Materia Medica and Pharmacy.

On the second day of each annual meeting each Section shall nominate its own officers to serve for the next ensuing year, their duties to commence with the close of the annual meeting at which they are nominated, and to continue until their successors are appointed.

The Section on State Medicine shall be composed of one member from each State, one from the Army and one from the Navy of the United States, representing, as far as practicable, the State Boards of Health. The officers of this Section to be also designated by the Committee on Nominations.

The Chairman of each Section shall prepare an address on the recent advances in the branches belonging to his Section, including such suggestions in regard to improvements or methods of work as he may regard important, and present on the first day of the annual session the same to the Section over which he presides. The reading of such address not to occupy more than forty minutes.

It shall be the duty of every member of the Association who proposes to present a paper or report to any one of the Sections, to forward either the paper, or a *title* indicative of its contents, and its *length*, to the Chairman of the Committee of Arrangements at least one month before the annual meeting at which the paper or report is to be read. It shall also be the duty of the Chairman and Secretary of each Section to communicate the same information to the Chairman of the Committee of Arrangements concerning such papers and reports as may come into their possession or knowledge, for their respective Sections, the same length of time before the annual meeting. And the Committee of Arrangements shall determine the order of reading or presentation of all such papers, and announce the same in the form of a programme for the use of all members attending the annual meeting. Such programme shall also contain the rules specified in the By-laws and Ordinances concerning the consideration and disposal of all papers in the Sections.

No paper shall be read before either of the Sections, the reading of which occupies more than twenty minutes. Such papers shall be referred by the Section to subcommittees specially appointed for their examination. The subcommittees shall be allowed thirty days for their examination; at the end of which time they shall forward the papers to the Board of Trustees, with such recommendations as they may deem proper. The authors of such papers, however, may read abstracts before the Section within the allotted twenty minutes. No member shall address the Section more than once upon the same subject, nor speak longer than fifteen minutes without unanimous consent.

All papers presented directly to the Association, and other matters, may, at the discretion of the Association, be referred to the various Sections for their consideration and report.

III.—STANDING COMMITTEES.

The following are the Standing Committees of the Association, to be filled by the Committee on Nominations, and to report at the next annual meeting subsequent to their appointment, namely: Committee of Arrangements, Board of Trustees, and Committee on American Medical Necrology.

The *Board of Trustees* shall append to each volume of the *Transactions* hereafter published, a copy of the Constitution, By-laws and Code of Ethics of the

Association. It shall paint conspicuously, at the beginning of each volume of the *Transactions*, the following disclaimer, namely: The American Medical Association, although formally accepting and publishing the reports of the various standing committees, holds itself wholly irresponsible for the opinions, theories or criticisms therein contained, except when otherwise decided by special resolution.

The *Committee on American Medical Necrology* shall consist of one member for each State and Territory represented in the Association, whose duty it shall be to procure memorials of the eminent and worthy dead among the distinguished physicians of their respective States and Territories, and transmit them to the chairman of this committee on or before the 1st of April of each and every year.

IV.—THE PUBLICATION OF PAPERS AND REPORTS.

No report or other paper shall be entitled to publication in the volume for the year in which it shall be presented to the Association, unless it be placed in the hands of the Board of Trustees on or before the first day of July. It must also be so prepared as to require no material alteration or addition at the hands of its author.

Authors of papers are required to return their proofs within two weeks after their reception; otherwise they will be passed over and omitted from the volume.

Every paper received by this Association and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the Association, and shall be published and sold for the exclusive benefit of the Association.

The Board of Trustees shall have full discretionary power to omit from the published *Transactions*, in part or in whole, any paper that may be referred to it by the Association, or either of the Sections, unless specially instructed to the contrary by vote of the Association.

V.—ASSESSMENTS.

The sum of five dollars shall be assessed annually, upon each delegate to the sessions of the Association, as well as upon each of its permanent members, whether attending or not, for the purpose of raising a fund to defray necessary expenses. The payment of this sum shall be required of the delegates and members in attendance upon the sessions of the Association previous to their taking their seats and participating in the business of the sessions. Permanent members, not in attendance, shall transmit their dues to the Treasurer.

Any permanent member who shall fail to pay his annual dues for three successive years, unless absent from the country, shall be dropped from the roll of permanent members, after having been notified by the Secretary of the forfeiture of his membership.

VI.—DELEGATES FROM THE MEDICAL STAFFS OF THE ARMY, NAVY, AND MARINE-HOSPITAL SERVICE.

Delegates representing the medical staffs of the United States Army and Navy, shall be appointed by the Chief of the Army and Navy Medical Bureaus, and the U. S. Marine-Hospital Service. The number of delegates so appointed shall be four from the Army medical officers, and an equal number from the Navy medical officers, and one from the Marine-Hospital Service.

VII.—DELEGATES TO FOREIGN MEDICAL SOCIETIES.

The President shall be authorized annually to appoint delegates to represent this Association at the meetings of the British Medical Association, the American Medical Society at Paris, and such other scientific bodies in Europe and other foreign countries as may be affiliated with us.

VIII.—DUTIES OF MEMBERS.

No one shall be permitted to address the Association, except he shall have first given his name and residence, which shall be distinctly announced from the chair, and the member may be required to go forward and speak from the stand, but not more than ten minutes at one time.

No one appointed on a special committee, who fails to report at the meeting next succeeding the one at which he is appointed, shall be continued on such committee, or appointed on any other, unless a satisfactory excuse is offered.

IX.—CONDITION EXCLUDING REPRESENTATION.

No State or Local Medical Society, or other organized institution, shall be entitled to representation in this Association that has not adopted the Code of Ethics; or that has intentionally violated or disregarded any article or clause of the same.

X.—OF THE PREVIOUS QUESTION.

When the previous question is demanded, it shall take at least twenty members to second it; and when the main question is under force of the previous question and negatived, the question shall remain under consideration the same as if the previous question had not been enforced.

XI.—JUDICIAL COUNCIL.

A council, consisting of twenty-one members, shall be appointed by the Nominating Committee, whose duty it shall be to take cognizance of, and decide, all questions of an ethical or judicial character that may arise in connection with the Association. Of the twenty-one members of the council first appointed the seven first named on the list shall hold office one year, and the second seven named shall hold office two years.

With these exceptions the term of office of members of the council shall be three years, seven being appointed by the Nominating Committee annually.

The said council shall organize by choosing a President and Secretary, and shall keep a permanent record of its proceedings. The decisions of said council on all matters referred to it by the Association shall be final, and shall be reported to the Association at the earliest moment.

All questions of a personal character, including complaints and protests, and all questions on credentials, shall be referred at once, after the report of Committee of Arrangements or other presentation, to the *Judicial Council*, and without discussion.

XII.—NEW BUSINESS.

No new business, resolutions by members, etc., shall be introduced at the general session of the Association except on the first and fourth days of meetings.

XIII.—OFFICERS AND COMMITTEES.

In the election of officers and appointment of committees by this Association and its President, they shall be confined to members and delegates present at the meeting, except in the Committee of Arrangements.

XIV.—ADDRESSES.

The Association shall annually elect, on the nomination of the Nominating Committee, three members of the profession, eminent in some of its departments, to deliver addresses in the general session of the next ensuing annual meeting—one on some topic or topics relating to general medicine, another relating to general surgery, and the third relating to public medicine, including under that head, hygiene, sanitation, prophylaxis, education and medical legislation, each of such addresses not to exceed one hour in its delivery.

The following resolution was adopted at the session of 1888:

That in future, each delegate or permanent member, shall, when he registers, also record the name of the Section, if any, that he will attend, and in which he will cast his vote for Section officers.

Also, that the Permanent Secretary may be enabled to erase from the roll the names of those who have forfeited their membership, the Secretaries *are, by special resolution,* requested to send to him annually, a corrected list of the membership of their respective Societies.

ORDINANCES.

Resolved, That the several Sections of this Association be requested, in the future, to refer no papers or reports to the Board of Trustees, except such as can be fairly classed under one of the three following heads, namely: 1. Such as may contain and establish *positively* new facts, modes of practice or principles of real value. 2. Such as may contain the results of well-devised original experimental researches. 3. Such as present so complete a review of the facts on any particular subject as to enable the writer to deduce therefrom legitimate conclusions of importance.

Resolved, That the several Sections be requested, in the future, to refer all such papers as may be presented to them for examination by this Association, that contain matter of more or less value, and yet cannot be fairly ranked under either of the heads mentioned in the foregoing resolution, back to their authors with the recommendation that they be published in such regular medical periodicals as said authors may select, with the privilege of placing at the head of such papers, "Read to the Section of the American Medical Association on the day of 18 ." (Vide *Transactions*, Vol. xvi, p. 40.)

Resolved, That instead of yearly reprinting the list of members of the American Medical Association, the Board of Trustees be instructed to prepare and print in the *Transactions* an alphabetical catalogue triennially, containing a complete list of the Permanent Members, with their names in full, designating their residences, the year of their admission, the offices they have held in the Association, and, in case of death or rejection, the date thereof. (Vide *Transactions*, Vol. xvii, p. 33.)

Resolved, That no report or other paper shall be presented to this Association unless it be so prepared that it can be put at once into the hands of the Permanent Secretary, to be transmitted to the Board of Trustees. (Vide *Transactious*, Vol. xvii, p. 27.)

Resolved, That the Permanent Secretary hereafter and from this date be authorized to draw a warrant upon the Treasurer for the expenses incurred in his attendance upon each session of the Association, and that the Treasurer is hereby instructed to pay the same. (Vide *Transactions*, Vol. xviii, p. 42.)

Resolved, That the faculties of the several medical colleges of the United States be recommended to announce explicitly in their annual announcements, circulars and advertisements that they will not receive certificates of time of study from irregular practitioners, and that they will not confer the degree upon any one who may acknowledge his intention to practice in accordance with any exclusive system. (Vide *Transactions*, Vol. xix, p. 31.)

Resolved, That those gentlemen who desire to report on special subjects, and will pledge themselves to report at the next meeting, be requested to send their names, and the subjects on which they desire to report to the Permanent Secretary. (Vide *Transactions*, Vol, xix, p. 42.)

Resolved, That hereafter the necessary expenses for rent of hall for general meetings and rooms for Sections to accommodate the annual meetings, and the necessary expenses for cards of membership, be paid out of the treasury of the Association. (Vide *Transactions*, Vol. xix, p. 42.)

Resolved, That each State Medical Society be requested to prepare an annual register of all the regular practitioners of medicine in their respective States, giving the name of the college in which they may have graduated, and date of diploma or license. (Vide *Transactions*, Vol. xx, p. 20.)

Resolved, That this Association recognizes specialties as proper and legitimate fields of labor.

Resolved, That specialists shall be governed by the same rules of professional etiquette as have been laid down for general practitioners.

Resolved, That it shall not be proper for specialists publicly to advertise themselves as such, or to assume any title not specially granted by a regularly chartered college.

Resolved, That private handbills addressed to members of the medical profession, or by cards in medical journals, calling the attention of professional brethren to themselves as specialists, be declared in violation of the Code of Ethics of the American Medical Association. (Vide *Transactions*, Vol. xx, p. 28.)

Resolved, That a committee of one be appointed residing at Washington, to render the Librarian of Congress such assistance as the interests of the Association may require. (Vide *Transactions*, Vol. xx, p. 28.)

WHEREAS, The proper construction of Art. IV, Sec. 1, Code of Ethics, A. M. A., having been called for, relative to consultation with irregular practitioners who are graduates of regular schools.

Resolved, That said Art. IV. Sec. 1, Code of Ethics, excludes all such practitioners from recognition by the regular profession. (Vide *Transactions*, Vol. xx, p. 30.)

Resolved, That if any member fail to reply for more than one year to the circular sent to him by the Board of Trustees he shall forfeit his right to the volume, and it shall revert to the Association, to be sold to any applicant at the current rates. (Vide *Transactions*, Vol. xxi, p. 30).

Resolved, That the Committee of Arrangements for the next ensuing meeting of this Association, and for all meetings thereafter, be directed to prepare a list of members present on a separate roll, for convenience and accuracy in calling the ayes and nays when the same shall be demanded. (Vide *Transactions*, Vol. xxi, p. 60.)

Resolved, That each year, until otherwise ordered, the President-elect and the Permanent Secretary be directed to appeal in the name of the Association to the authorities of each State where no State Board of Health exists, urging them to establish such boards. (Vide *Transactions*, Vol. xxvi, p. 50.)

Resolved, That the Permanent Secretary is hereby directed annually to report the names of States where boards of health exist, and also of those which decline to establish them; said report to form a part of the annual proceedings of the Association. (Vide *Transactions*, Vol. xxvi, p. 50.)

Resolved, That members of the medical profession who in any way aid or abet the graduation of medical students in irregular or exclusive systems of medicine, are deemed thereby to violate the spirit of the ethics of the American Medical Association. (Vide *Transactions*, Vol. xxvii. p. 48)

Resolved, 1. That the American Medical Association adopts the International Metric System, and will use it in its Transactions. (Vide *Transactions*, Vol. xxx. p. 44.)

2. Requests that those who present papers at its future meetings employ this system in their communications, or reprints thereof. (Vide *Transactions*, Vol. xxx, p. 44.)

3. Requests the medical boards of the hospitals and dispensaries to adopt the Metric System in prescribing and recording cases; and that the Faculties of the medical and pharmaceutic schools adopt it in their didactic, clinical, or dispensing departments. (Vide *Transactions*, Vol. xxx, p. 44.)

Resolved, That the President and Secretary of this Association are directed to annually petition Congress to enact a law which shall permit every person engaged in a scientific pursuit to import for his own use, free of duty, any one book or instrument appertaining to his special pursuit. (Vide *Transactions*, Vol. xxx, p. 45.)

Resolved, That the above named officers are further directed to urge the State Medical Societies and their auxiliary branches to aid this Association in accomplishing this purpose, by petitions to Congress, and by otherwise influencing Congressmen. (Vide *Transactions*, Vol. xxx, p. 45.)

Decision by Judicial Council: A gentleman who is not in affiliation with a County, District, or State Medical Society, where such organizations exist, is *not* entitled to be registered as a permanent member upon the claim of having been a delegate from a body not now entitled to representation in this body. (Vide *Transactions*, Vol. xxx, p. 57.)

Resolved, First. That a committee of five be appointed by the President of the Association, to be called the Standing Committee on "*Atmospheric* Conditions, and their relations to the prevalence of Diseases."

Second, That that committee be authorized to select such places as will best indicate atmospheric conditions in the more important climatic and sanitary district of the United States—not less than six, nor more than twelve—and establish therein a means for continuous observation and record of all appreciable conditions of atmosphere, according to the most approved methods, and of the origin and prevalence of all acute diseases.

Third. That the Committee, through their chairman, be authorized to draw upon the Treasurer of this Association for such sums as may be found necessary for the proper execution of the work assigned to it, the aggregate amount not to exceed $500, during the ensuing year, and that a detailed report of all sums drawn and expenditures made must be presented at the next annual meeting of the Association. (Vide *Transactions*, Vol. xxxii, p. 35.)

Resolved, That the regular graduates of such dental and oral schools and colleges as require of their students a standard of preliminary or general education, and a term of professional study equal to the best class of medical colleges of this country, and embrace in this curriculum all the fundamental branches of medicine; differing chiefly by substituting practical and clinical instruction in dental and oral medicine and surgery, in place of practical and clinical instruction in general medicine and surgery, be recognized as members of the regular profession of medicine, and eligible to membership in this Association on the same conditions and subject to the same regulations as other members. (See Journal of the Amer. Med. Ass'n, Vol. viii, p. 722.)

Whereas, It has been the unswerving policy of the Trustees for the publication of The Journal, to enlarge and increase the value of The Journal as fast as the income of the Association will permit, therefore

Resolved, That said Board of Trustees be a Standing Committee on Finance to which all propositions for the appropriation of money, made hereafter, shall be referred and reported upon before final action on the same by the Association. (See Journal of the Amer. Med. Ass'n, Vol. viii, p. 722, 1887.)

THE RECENT THERAPEUSIS OF DISEASES OF THE NERVOUS SYSTEM.

Though the attention and interest that were excited by Brown-Sequard's announcement of the discovery of a remedy for functional and asthenic disorders of the nervous system in hypodermatic injections of testicular juice has subsided, that physiologist has persisted in the experiments he was making with that substance in 1889, and in a recent memoir presented to the Academy of Sciences he made the following conclusions. First: In old men in whom the spermatic glands especially have lost their function, injections of testicular liquid may furnish that which is wanting for the potency of the nervous centres. Second: In all diseases feebleness may be combatted advantageously by injections of testicular liquid. The latter is most advantageously employed in pulmonary tuberculosis, locomotor ataxia, leprosy; anæmia, paralysis, etc. He persists in his former statement that during the administration of this substance the appetite and sleep return, micturition and defecation are more regularly performed, the genital functions are increased, and intellectual work becomes easier.

During the early part of this year Constantin Paul presented a memoir to the Paris Academy of Medicine, in which he stated that a sterilized ten per cent. solution of the gray substance of the brain of a sheep, injected in the cellular tissue in doses of five cubic centimetres, was well tolerated and exercised influences somewhat similar to those obtained by Brown-Sequard with testicular juice. A person receiving an injection becomes aware a short time subsequently of a power that he did not before possess; amyesthenia and muscular impotence rapidly diminish, and the patients are able to take long walks. After a few injections vertebral pains and spinal hyperæsthesia disappear, as do also the fulgerating pains in ataxics; insomnia and neurasthenic cephalalgia are cured; functional cerebral impotence is relieved; sexual impotence is ameliorated; and in chronic diseases functional processes are very much improved.

Brown-Sequard's results suggested that the alkaloid spermine, that Schreiter had obtained from sperm in 1878, might be the active principle in effecting the improvement he noted. Poehl has shown that this alkaloid may be obtained from the thyroid gland and cerebral substance as well as from the testicular juice. Victoroff claims that spermine is the active principle of Brown-Sequard's emulsion and that he has obtained equally good results from its administration, though the French physicians regard this claim as exaggerated.

The results obtained by Paul have also been observed by d'Arsonval, Babes, Cullerre, and others who have followed his directions.

More recently Dr. Crocq, *fils*, of Brussels, concluding that the phosphates were the important constituents in the testicular as well as the cerebral emulsions, has used in diseases for which the latter are employed, hypodermatic injections of phosphate of soda in doses varying from one-third of a grain to a grain daily or every other day. In a recent report in the *Gazette hebdomadaire de médicine et de chirurgie* Dr. Crocq states that after a few injections of phosphate of soda there is improvement in the appetite and in sleep; cephalalgia and other nervous pains disappear; physical and moral strength is invigorated; sexual desire is augmented; and in chronic diseases there is a general improvement in the condition of the patient.

The theory of dynamo-genesis advanced by Brown-Sequard, that, "in nature nothing creates itself nor loses itself; the law is as fatal for energy as it is for matter, and if energy is to be produced it is necessary to receive some portion of it," seems to have been accepted by Paul. But this law does not altogether explain Crocq, *fils's* results. And while the capability of these reporters can not be questioned, to the American mind the element of psychical therapeusis plays an important rôle in the results obtained. We would not, however, imply that this is altogether the case. For the improvement that has occurred in patients suffering with myxœdema in consequence of thyroid juice, suggests that the organic secretions contain complex products that may exercise decided influence on the organic functions of an individual into whose tissues they are injected.

MEDICAL EDUCATION FOR MEDICAL CULTURE.

The management of medical colleges has been too much dictated by the interests of the members of the faculty on the one hand, and the demands of medical students on the other. The interest of individual members of the faculty has thrown too much time and effort into clinical teaching, which has come to mean amphitheatre teaching. It has encouraged large classes and numerous alumni at the expense of scholarship. It has let down the bars of admission to medical schools and thrown them down still lower to let out the graduates. An ignorant and poorly equipped alumni multiplies consultations for an indulgent and popular faculty. Faculty management of medical schools has prevented the spirit of modern educational methods from gaining control here as it has done in technological schools elsewhere. The cry of "practical teaching" has been raised against every effort to secure aids to medical culture in medical schools. But the real issue has been utility to the faculty.

On the other hand, because, unfortunately, the doctor's degree has carried with it the right to practice medicine, there has been a constant demand on the part of students for the shortest possible course of study. It is humiliating to mention the length of the average college term to-day. It is still more humiliating to be obliged to say that only two such terms are required in certain portions of the country. The poor quality, so far as preliminary education is concerned, of the average medical student, has resulted in the demand for an educational pap suitable to his unevolved mental digestion. This again has precluded the idea of culture. It has militated against the refined and erudite teacher. It has fathered the rowdyism which still prevails in many medical schools.

Because our medical education has been guided by the interest of the faculty and the demand of presumptuous students, there has resulted a sort of medical teaching which has repulsed the educated and cultured students, and driven them into other professions and occupations. If the medical profession would secure a fair proportion of college-bred men, the medical schools must not only exclude the ignorant and untrained, but they must furnish a medical education of a better quality. The ridiculous stories with which too many medical lectures have been garnished must give place to far-reaching thoughts and lofty ideas. The minimum compulsory course must be supplemented by many elective, advanced courses. The short term of five or six months must be made a continuous series of shorter terms. The bare, dingy and silent walls of the medical school must become alive with suggestions of thought and work and aspiration. The locked-up museum and the antiquated show of a library must become living, growing, moving elements of medical education. The clinic for tragic and oratorical display, must become the laboratory of bedside instruction, bedside investigation and literary research. The working faculty of the medical schools must be reinforced by occasional lectures from thinkers and teachers in science, psychology and sociology. The medical school must no longer be the home of sordid self-interest, but the culture of a high-minded education must come in and abide.

SELECTIONS.

The Height of Rooms.—According to the *Practitioner* for March, the English Local Government Board has addressed a memorandum to the sanitary authorities of England concerning the height of rooms used for habitation, a recent law having conferred upon them authority to regulate the matter. It is held that it is unnecessary to appoint a maximum height, but, as low-pitched rooms are more difficult to ventilate than rooms of greater height, especially sleeping-rooms in which the occupants are not able during sleep to vary the conditions of air-movement through the rooms, a minimum height should be established. While a room may have sufficient floor space for a given number of people, whether this number will have enough breathing space to keep them in health will depend upon the height of the room. For example, if there is just enough breathing space when the height is eight feet, it is obvious that there will not be enough when the height is only seven feet. A minimum of nine feet is recommended, and the board will not approve of a smaller height than eight feet over the total area of the room. In a room of irregular height under the roof of a house there must be a mean height of eight feet.

Such a law does not seem to us to attain the desired end of the prevention of overcrowding; for, no matter how high a room may be, it is possible to so fill it with human beings that the breathing space will be inadequate for them, while a room less than eight feet high may be so well ventilated that the change of air compensates for the deficiency in cubic air space. Furthermore, in cold climates the difficulty for the poorer classes, for whose benefit this law was passed, to purchase enough fuel to heat their rooms and to keep them at a comfortable temperature, has always led to the stuffing of every crevice and cranny through which air could enter, and the advantage of high ceilings is vitiated.

If with such a law there was a provision defining the number of inhabitants to the minimum of cubic space, the end desired might be attained, provided there was a sufficient number of inspectors to detect and punish violations of the law.

The Transfusion of Nervous Matter in the Insane:—Dr. Constantin Paul has called attention, in a recently published memoir on the subject, to the value of what he calls nervous transfusion in the treatment of neurasthenia. The substance employed is the gray matter of the brain of a recently slaughtered sheep, allowed to macerate for twenty-four hours in twice its weight of pure glycerin, to which is subsequently added an equal quantity of boiled water. This is filtered, as well as prepared with all antiseptic precautions, and should be a clear, limpid, colorless, sterile liquid that will keep for a week with ordinary precautions. A drachm of this liquid is injected every second day into the thigh or the lumbar region, after the skin, syringe, and needle have been carefully disinfected. The injected liquid forms a small tumor that usually disappears within twenty-four hours.

In the *Gazette Médicale de Paris* for August 27th Dr. A. Cullerre reports the results that he has obtained with this substance in fourteen cases of insanity. In eight patients the results were good, in four there was a slight influence produced, and in two there was no effect. The author concludes that these transfusions are beneficial in asthenic as well as in tuberculous insane patients, and that they arouse the nutritive functions almost instantly. One of the first evidences of this result is an increase of appetite, a most desirable result in mental alienation, to combat sitiophobia. The reconstructive effects are rapid, muscular weakness disappears, the flesh increases, and all the organic functions are regulated. The psychopathic state in curable cases has been transitorily improved during a few hours immediately following the injections, but this improvement has not persisted. The author does not consider this conclusion definitive, as the major portion of his patients were incurably insane, and it is the rule in the curable forms of insanity for improvement in the mental condition to keep pace with nutritive improvement.—*New York Medical Journal.*

NECROLOGY.

A. Reeves Jackson, M.D.

One of the most highly esteemed and best beloved members of the medical profession died in Chicago, November 12.

The immediate cause of the death of Dr. Jackson was an apoplexy which is believed to have been the sequence to a poisoning of his system by an infective wound received while performing an operation some fifteen years ago.

Dr. Jackson has been so prominent a member of the medical profession for twenty-five years as to make his personal career familiar to all readers of our literature, to which he was a liberal contributor.

During the late War he served in the Army as an Assistant-Surgeon and as a Surgeon, rising to the position of Assistant Medical Director of the Army of Virginia. Soon after the close of the War he located in Chicago, where he early interested himself in founding the Woman's Hospital of Illinois, of which in 1871 he became its Surgeon in Chief. About this time he became identified with Rush Medical College as Lecturer on Gynecology.

In 1882, he became one of the founders of the College of Physicians and Surgeons of Chicago, of which he was President up to the time of his death.

The professional ambitions of Dr. Jackson were without doubt fully gratified. He stood with the limited few on the top rung of the ladder in his specialty, and becomingly accepted the honors so freely bestowed upon him by his fellows.

In the death of Dr. Jackson, the medical profession sustains the irreparable loss of a progressive leader. The laity and State an invaluable citizen. His wife and daughters have our profound sympathy in this their time of greatest grief and affliction. Dr. Jackson was a rare man. We ne'er shall see his like again.

BOOK REVIEWS.

An American Text-book of Surgery for Practitioners and Students. By Chas. H. Burnett, M.D., Phineas S. Connor, M.D., Frederick S. Dennis, M.D., William W. Keen, M.D., Charles B. Nancrede, M.D., Roswell Park, M.D., Lewis S. Pitcher, M.D., Nicholas Senn. M.D., Francis J. Shephard, M.D., Lewis A. Stinson, M.D., William A. Thompson, M.D., J. Collins Warren, M.D., and J. Wm. White, M.D. Edited by William W. Keen, M.D. LL.D., and J. William White, M.D., PhD. Cloth, 8vo., p. 1209. Philadelphia: W. B. Saunders. 1892.

This rather bulky volume has been prepared on a somewhat novel plan. We learn from the preface, that the proof-sheets of each article were submitted to all the authors for criticism and revision, and that " while it thus represents in general the views of all the authors *each individual author is free from absolute responsibility for any particular statement.*" The italics are ours, and while the motive may have been laudable, yet we cannot resist expression of regret that each article is unsigned. It may be old fashioned, but we vastly prefer a signed article to an anonymous one however excellent. The great authority of the well known surgeons whose names appear on the title page would surely not be lessened if it were known, that Prof. Burnett wrote the chapter on diseases of the ear and Prof. Thomson that on diseases of the eye, or that any other of the topics was written by some one of this brilliant galaxy whose special studies had made him a recognized authority on the subject. It is easy to hazard the conjecture that the chapter on Surgery of the Spine was written by Prof. White, that on the Head by Prof. Keen, and that on the Abdomen by Prof. Senn, and the whole book might be assigned without very much difficulty, but *cui bono?* The authors are "free from responsibilty for any particular statement and do not expect for anything that appears in this book to be individually quoted. It must not be understood that this is therefore wholly a publisher's book. It is on the contrary a work of great merit, despite the fact of its asserted irresponsibility.

The work as a whole is a great addition to American Surgical literature. The editors have been more than usually successful in preserving the unity of form and style, in articles from so many hands, and the articles themselves are prepared carefully to the date of publication. We notice an account of Fluhrer's gravity aluminium probe and Girdner's "telephone probe" and induction balances in the chapter on injuries of the head, but we regret to see an old *cause celebre,* misquoted on page 506 as the Vermont "Crowbar Case." This case was not one of injury by a "crowbar" but a "tamping iron" which identical object is specimen No. 3,106 in the Warren Anatomical Museum at Boston. The tamping iron in question is one and a quarter inches square at one end and gradually tapers to one-fourth of an inch in diameter at the other end; it is three feet seven inches long, and weighs thirteen and a quarter pounds. Our English friends so long declined to accept this case, that it would seem our "American" text-book should state it accurately. The skull itself is specimen No. 949 in the Warren Anatomical Museum, and bears visible testimony to the curious observer, that it was not a factor in a "Crowbar Case."

The fatal do nothing plan in cases of chest injury, is sharply contrasted with the bolder surgery of to-day on page 621, where a story is related that, "In one instance after a stab wound of the chest a man was allowed to die because it was held that a large vessel in his lung had been wounded and that his condition was consequently helpless. It was found later, however, that the bleeding all came from an intercostal artery, through which the man had bled to death into his *own* chest. In this case the result might have been very different had free incision been made and the source of the hæmorrhage sought for." This plain moral to a melancholy story is a rather mild echo of Guthrie's Golden Rule enunciated nearly forty years ago from the bloody fields of the Crimea; true now as then, "tie both ends of the bleeding vessel in the wound, enlarging the wound if necessary."

In this text-book the doctrine of microbic origin of many surgical diseases, and obstacles to repair is given its complete application to every topic, and the consequent enriching of surgical technique by new operations, and new therapeutical measures, receives full attention. It is no halting allegiance that our American Surgeons give the Microbic theory. They frankly state their faith and describe the procedures based thereon, with the positiveness born of experimental knowledge, and with results that justify the popular impression of the laity, that Surgery is a term almost synonymous with biological progress.

In conclusion our authors may be congratulated on the production of a work on Surgery which faithfully reflects the best teachings of the day, and which is undoubtedly destined to become deservedly popular with their countrymen.

TRANSACTIONS OF THE FORTY-SECOND ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY. Held at Vandalia, May 17, 18, and 19, 1892.

The proceedings of this Society are so voluminous as to constitute a large book of almost five hundred pages of closely printed matter. The President, Dr. Charles C. Hunt of Dixon, called the meeting to order. The papers and discussions are valuable additions to the medical literature of the day.

Dr. E. Fletcher Ingals of Chicago, was elected President, and Dr. D. W. Graham re-elected Secretary for the ensuing year. Dr. Graham has for many years faithfully served the Society as its Secretary.

The next place of meeting and time will be in Chicago the third Tuesday in May, 1893.

TRANSACTIONS OF THE MEDICAL SOCIETY OF NEW JERSEY. The one hundred and twenty-sixth Annual Meeting.

It will be noted that this is one of the oldest organizations of physicians in this country. The meeting was convened at Atlantic City, June 28, 1892, with the President Dr. Elias J. Marsh in the Chair

The profession of New Jersey is to be congratulated on the completeness of its State organization. A pleasant feature of the occasion was the reception of delegates from other State societies, and the appointment of corresponding delegates to other State societies. This is a feature that warmly commends itself to the State societies of the Central and Western States. Such visitations to sister State societies is not only a social pleasure, but acts as an incentive to improvement in State and county organization.

After the reading of papers and discussions the society adjourned to meet at Spring Lake, N. J., on the Fourth Tuesday in June 1893. Dr. Geo. T. Welch, of Passaic having been elected President and Dr. William Pierson of Orange, Secretary.

HYDROTHERAPY AT SARATOGA. A Treatise on Natural Mineral Waters, by J. A. IRWIN, M.A., M.D. Cassell Publishing Company, New York.

As the title of this little work indicates, it is a description of the mineral springs of Saratoga, and their therapeutic application; we confess we do not see the justification of the sub-title, in which the volume is styled a treatise on natural mineral waters.

While there is much of value in the description of the qualities and application of the Saratoga waters, we regret that the writer did not confine himself to that subject exclusively, omitting the somewhat platitudinous utterances on the general subject of mineral waters and balneology. While there is nothing erroneous in the conclusions advanced, yet the elementary statements recommend it rather to the lay than professional reader.

The work is handsomely published and contains several wood cuts. The one on the first page, a picture of the author, shows a man of fine physique, clean cut features and high forehead.

TRANSACTIONS OF THE FIFTY-NINTH ANNUAL SESSION OF THE MEDICAL SOCIETY OF THE STATE OF TENNESSEE, Knoxville, April 12, 13, and 14, 1892.

The Society was called to order by the President, Dr. J. W. Penn, of Humboldt, Tenn. The subject of a more complete organization of the profession of the State was discussed, and with an evident determination on the part of those present to bring every regular practitioner in the State into membership relations with the Society, a condition that should, and will no doubt, be brought about as nearly as possible.

The papers read and discussed were of such a character as to be an attraction to any man who has a particle of professional pride.

Dr. C. W. Beaumont, of Clarksville, was elected President for the ensuing year. Dr. Daniel E. Nelson, of Chattanooga, was re-elected Secretary. Dr. Nelson has served the Society in this capacity for several years. The next place of meeting is Nashville, and time, the second Tuesday in April, 1893.

MISCELLANY.

ELEVENTH INTERNATIONAL MEDICAL CONGRESS.—(Rome, September 24 to October 1, 1893.) The American Sub-committee has the following membership: W. T. Briggs, Nashville, Tenn.; H. P. Bowditch, Boston, Mass.; S. C. Busey, Washington, D. C.; C. Cushing, San Francisco, Cal.; N. S. Davis, Chicago, Ill.; A. Jacobi, New York, Chairman; Norman W. Kingsley, DD.S., New York; Wm. Osler, Baltimore, Md.; Wm. Pepper, Philadelphia, Pa.; F. Peyre Porcher, Charleston, S. C.; Charles A. L. Reed, Cincinnati, O.; D. B. St. John Roosa, New York; Alex. J. C. Skene, Brooklyn, N. Y.; and James Stewart, Montreal, Can.

The Secretary-General informs the Committee, that the French Railway Company has offered to the members of the Congress a reduction of 50 per cent. on its fare.

DR. F. E. YEOKIN of Shreveport, La., has been elected Professor of Materia Medica and Therapeutics, and Nervous Diseases in the Gross Medical College.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from November 5, 1892, to November 11, 1892.

Major Justus M. Brown, Surgeon U. S. A., is granted leave of absence for four months, with permission to apply for an extension of two months.

Capt. Eugene L. Swift, Asst. Surgeon U. S. A., is granted leave of absence for one month, to take effect upon expiration of present sick leave.

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ORIGINAL ARTICLES.

ADDRESS ON PHYSIOLOGY.

Delivered in the Section of Physiology and Dietetics, at the Forty-third annual meeting of the American Medical Association, held in Detroit, Mich., June, 1892.

C. H. A. KLEINSCHMIDT, Ph.D., M.D.,
CHAIRMAN OF SECTION, WASHINGTON, D.C.

Gentlemen: It is obviously the first and at the same time the most pleasant duty of your chairman, to congratulate the members of this Section on the fact, that the American Medical Association, at its forty-third annual meeting decided by an almost unanimous vote, to "omit the word physiology from the title of the Section on Practice of Medicine, and to form a new Section on Physiology and Dietetics." The wisdom of this action admits of no doubt, for the creation of this new Section enables those more especially interested in our branch of the medical sciences to present and discuss the results of their labors in this field under conditions much more favorable and satisfactory than could possibly be afforded while physiology was coördinated in the same Section with a branch, in which the usually superabundant, important and practical matters presented for consideration were apt to encroach upon those of a more specifically physiological bearing.

The next duty to be performed is to express to you the high appreciation of the honor conferred by being selected the first chairman of this important Section: yet, this appreciation is weighed with the feeling of regret, that the distinction was bestowed upon one, who but too well knows that he lacks many of the qualifications for his position. He hopes, however, that with the kind coöperation of his fellow members, his task will be rendered less weighty, and has the assurance that the results of your work will bear out the wisdom of the Association in the creation of the new Section.

Now, according to a by-law of our Association, it is made the function of the Chairman, to review in an address to be presented on the first day of the annual meeting, the recent advances made in the branches belonging to his Section, and in compliance with this rule, I now have the honor to present to your consideration a brief resumé of topics directly concerning us as physiologists. But in looking over the field of physiology as a whole, we find so much to claim a more than passing attention; so much active cultivation in every direction by so great a number of diligent investigators, that the task of presenting even a very concise synopsis of the work done in every part of the field appears altogether beyond the power of your reporter, in view of the vast amount of material accumulated in the literature of the year, an abundance so great as to become a very *embarras de richesses*. Hence it has been deemed advisable to confine the selection to the progress made in the physiology of the nervous system, partly because of a personal predeliction, but mainly because of the full recognition of the fact, that the activity of the nervous system underlies, regulates, and modifies directly or indirectly all vital functions whatsoever. Thus any discussion or investigation of the functions of the *working organs* so-called, can never be complete, unless allied to a consideration of the force calling them into play, to an investigation of the nerve-mechanism exciting, inhibiting or in some other way modifying them; and it has been said with perfect truth, that a complete history of the physiology of the nervous system would almost represent a history of physiology in general. In thus selecting, what appears to him the most interesting branch of physiology, your reporter can not, at the same time, close his eyes to the fact, that he is about to engage in the recital of what must necessarily prove a twice told tale to his hearers, and he also feels, that he runs the great risk of omitting to mention topics, that may possess the highest value in the opinions of some, while laying what may be called undue stress on those, that in the eyes of others may seem to be entitled to less consideration. Trusting, however, to your kind indulgence, he hopes that the imperfect sketch about to be offered may contain at least some food for thought, and a few points of interest to the members of the Section.

The functions of the cerebro-spinal axis as a whole are discussed in his usual brilliant style by Richardson (*Asclepiad*, 1891, *p.* 365 *et sequ*), in a lecture before the Medico-Psychological Association, in which he argues in support of the theory, that the central nervous system is to be regarded in the light of a static thermal centre and water-power; the mainspring o all vital actions. That the gray matter of the cerebro-spinal axis is the seat of a slow combustion while the white matter supplies the combustion material, and that this accounts for the grand nerve phenomena of life in action, and their repose in sleep both states depending on variations of tension.

It is also claimed for the theory, that it explains the effects of varying external pressures and temperatures on the central nerve-organism. The autho assigns to the cerebro-spinal fluid the most important function, holding it to be the condensed fluid o the combustion of the cerebro-spinal axis, which latter is not merely an absorbing centre for the reception of external vibrations, but a true chemical and dialysing centre and the centre of static combustion The theory looks upon the ganglia as supplementary centres supplied from the main source, while plexuses are inter-communicating points of nerves to enable vibrations to be carried on, should one or mor nerves of a plexus fail to functionate, while decussating fibres are the means by which centres are prevented from becoming independent of each other an losing their compensating balance. There are two distinct combustions in the body. The one static, in the central nervous system, the other in the muscular and active vital organs, yielding the animal heat recognized as the sensible heat of the body. The latter, while apparently independent and more active, may possibly depend for its continuous existence on the slower cerebral combustion, that keeps it alight and regulates its activity by regulating its blood supply, and through this its oxygen and combustible material.

This theory has at least the charm of being well presented, with the additional merit of attempting an explanation of nerve-function upon a purely physical and chemical, *i.e.*, scientific basis, and while indeed, like all other theories upon nerve force, it fails in unveiling this great mystery, the method adopted by its author is the only one that promises a rational solution of the question, for it is the only method to be applied in modern physiology, and to which our science owes every advance that has been made in an elucidation of the problem of life.

Beard (*Northwestern Lancet*, 1891, pp. 181, *et sequ*), after a resumè of the theories of sleep as advanced by Preyer and others, reaches the conclusion that sleep appears to be the result of a fall of temperature incident to the decline of destructive metabolism in the nerve centres, while insomnia is the result of a maintenance of a pseudo-active metabolism and of consequent temperature in these cases. The practical conclusions to be drawn from this theory are, that those remedial measures which directly diminish metabolism and thus reduce cerebral temperature best afford immediate relief from insomnia; that those agents indirectly producing this result through their influence on the vascular system, are of secondary value only, while those permanently improving nutrition, stimulating waste-removal and restoring the normal ebb and flow of metabolic activity in the nerve cells: electricity, massage, etc., have the largest field of usefulness in the cure of insomnia.

The sense of muscular effort is treated at length by Waller (*Brain*, 1891, p. 179), who sums up his views by holding that the duly coördinate action of the muscular execution depends upon three factors: the muscular coördination at the central origin of action, resulting from past experience and consisting in the emission of nerve impulses grouped and measured in conformity with intended and foreseen effects. Appropriate reflex response, of which the immediate causes are centripetal impulses from sense organs, including those from the skin, muscles, and articulations, collectively referred to as muscular sense. Direct muscular response to passive stretching and extensive vibrations.

Belmondo and Oddi, (*Arch. Ital. de Biol.*, 1891, p. 17) offer experimental researches of great interest, on the influence of the posterior spinal roots upon the excitability of the anterior roots with the following important results: 1. In destroying the conductivity of the posterior roots by means that cause no irritation whatever, there is found a constant diminution in the excitability of the corresponding anterior roots. 2. Every excitation of the sensory roots per contra, increases during a longer or shorter period, the excitability of the anterior roots. Sometimes this hyper-excitability is preceded by a period, generally very brief, during which the excitability of the anterior roots is lost or greatly diminished. 3. These different factors seem independent of cerebral influence and consequently of consciousness, at least in the proper sense of that term. This influence is not affected by section of the medulla oblongata. The authors hold, that stimuli are constantly reaching the central nervous system from the periphery and pass into the motor roots.

In this connection may be noted the investigations of Schaffer (*Arch. f. Mikrosk. Anat.*, 1891, p. 157) upon the arrangement of fibres in the spinal cord. undertaken in blind worm, grass-snake, tortoise, lizard, rabbit, bat and cat, proving that fibres from both sides of the posterior horn go directly through the anterior commissure into the opposite anterior column. Fibres also pass from the lateral columns into the opposite anterior column.

Our knowledge of the physiology of the cranial nerves has received some important additions; thus Bernheimer, in a very valuable study of the origin of the optic nerve, made upon the brain of the human fœtus, and of the new born, shows that the external corpus geniculatum is not merely a ganglion *through* which the fibres of the optic tract pass, but that it is a true place of origin for many of these fibres. That the second bundle of tractus-roots, perhaps the largest bundle of all, comes from the corpus subthalamicum. That a few fibres are derived from the internal geniculate ganglion, while two fibre-tracts can be demonstrated as coming from the thalamus opticus, viz., a deep and a superficial root. Now the importance of these researches lies in this, that they show that we have hitherto had an exaggerated idea of the significance of the corpora quadrigemina as points of origin of the optic nerve, for while the author thinks that there is a root derived from the posterior corpora quadrigemina, he appears to doubt the existence of a root derived from the anterior corpora quadrigemina. He also failed to prove the existence of the so-called descending root; of the origin from the oculo-motor nucleus and from the crus cerebelli. These results, if found correct, must modify our views upon the functions of the subthalamic bodies, optic thalamus and corpora quadrigemina as relating to vision.

Hebold (*Neurol. Centralbl.*, 1891, p. 167) concludes from pathological data, that the fibres in the optic nerve pass in closed bundles; the uncrossed bundle lies on the outer side of the optic nerve, chiasm and tract, while the crossed bundle is central in the nerve, but ventral in the tract.

The *oculo-motor* nerve is generally looked upon as the only nerve of accommodation, but Morat and Doyon (*Arch. de Physiol. norm. et pathol.*, 1891, p. 507) offer experimental proof in favor of the view, that instead of one, there are in reality two nerves of accommodation: the oculo-motor for near vision, and the sympathetic for distant vision; and that the latter acts as an inhibitory nerve to the former, hence the cervical sympathetic, carrying these fibres to the eye is the inhibitory nerve of accommodation.

In connection with the trigeminus we find an interesting point in an experiment by Gley (*Compt. rend. Soc. de Biol.*, 1891, p. 173). He presented before the Société de Biologie a rabbit, in which intracranial section of the ophthalmic division of the trigeminus, together with that of the oculo-motor, was not followed by trophic changes in the eye, although that organ was completely anæsthetic. This is additional proof against the theory that trophic lesions following sections of the V. are due to irritation of foreign bodies and loss of sensibility in the parts supplied by the nerve.

From a study of a case of bulbar paralysis and the areas of degeneration in the medulla as shown by the microscope, Tooth and Turner (*Brain*, 1891, p. 473) present some interesting and important conclusions on the cerebral origin of certain cranial nerves. These investigations support the views of Mendel, derived from experiments on rabbits, and guinea-pigs, that the oculo-facial group of muscles receives its nerve supply from the oculo-motor nucleus by way of the facial. They also show that the oro-facial group (orbicularis oris) is presumably innervated by the hypoglossal nucleus; that the motor fibres for the palate and larynx carried in the accessorius vagi are in all probability derived from the region of the hypoglossus nucleus. These results are not only of interest in point of diagnosis and pathology of bulbar paralysis, but equally interesting from a physiological point of view, as illustrating the rule, that muscles usually or habitually acting in harmony receive their motor supply from the same central source, although these fibres may in part be carried to them by different peripheral nerve tracks.

The old controversy as to the seat of origin of the auditory nerve has led Sala[1] to new experimental researches with a view of settling this mooted point, and he feels himself justified in the conclusion, that neither Deiter's nor the dorsal, nor Bechterew's nucleus have any claim to be considered points of origin of the auditory nerve, but that the anterior nucleus and the lateral tubercle are the real and only nuclei of origin, the former for the anterior, the latter for the posterior division of the nerve.

Howel and Huber[2] state that the communicating branch between the superior and inferior laryngeal nerves (Galen's anastomosis) does not carry depressor fibres from the heart, but that, as proven by experiment and secondary degeneration in the dog, it is a sensory branch of the superior laryngeal for the trachea and œsophagus, although fused with the inferior laryngeal in part of its course. This proves Longet's supposition to have been correct, who believed that the œsophagus received a sensory nerve supply from the laryngeal through this anastomosis.

Our knowledge of the function of the phrenic nerve has been increased by Ferguson (*Brain*, 1891, p. 282), who adduces conclusive proof, experimental as well as pathological, that the phrenic nerve is not, as generally held, a purely motor, but a mixed nerve, thus supporting the opinion expressed by Ross from a clinical standpoint, and the suggestion made by Peter and Henle.

The *sympathetic* system has received considerable attention at the hands of physiological investigators. Thus Arloing (*Arch. de Physiol.*, 1891, p. 160) records the continuation of his researches on the functions of the cervical sympathetic, which lead him to the conclusion that the cervical sympathetic contains trophic fibres. The experiments were made on the ox and dog. The muzzle of the former showed marked histological changes in the papillæ and stratum granulosum after section of the nerve. In the dog the changes were not immediate, because of absence of glands in the more hairy parts of its nose, which are abundant in the ox. But the changes were marked after two months, the skin of the nose becoming papillated and dry, with great hypertrophy of the corneous layer. He interprets these results by concluding that the cervical sympathetic supplies trophic fibres to the glands and epithelium, and that their action is independent of that of the vaso-motor and glandular fibres.

The same author (*Journ. de Méd. veter. et Zooteich*, 1891, p. 171), contributes researches upon the secretory functions of the cervical sympathetic as affecting the activity of the lachrymal, sebaceous and sudoriparous glands, and finds that its action is inhibitory to lachrymal secretion, but excitor to the sebaceous and sudoriparous glands.

Sherrington (*Brit. Med. Journ.*, 1891, p. 635) finds that the excitation of the cervical sympathetic in the monkey by feeble induction shocks thrown into the peripheral end of the divided nerve of one side (the animal being under an anæsthetic), results in a slight enlargement of the palpebral aperture by a lifting of the upper lid, dilatation of the pupil, a drawing back of the pinna of the ear, with slow erection of the skin of the nostril and hair of forehead, temple, cheek and upper part of whiskers, giving an expression of surprise and fright. Section leading to the converse, with slight flushing of the upper gum. As, according to Dr. Hall White, the collateral ganglia of the sympathetic are atrophied and degenerate organs like the coccyx and appendix cæci, the question suggests itself, whether loss of hair from the front of the human scalp, the common form of baldness, is not a phenomenon due perhaps to degeneration of the superior cervical ganglion in man, contended for by White.

As to the action of *pilo-motor* nerves, Langley and Sherrington state (*Journ. of Physiol.*, 1891, p. 278) that the hairs of the monkey, cat, and probably all animals in which horripilation takes place under the influence of strong emotion, may be erected by stimulation of nerve fibres coming from the spinal cord and passing through the sympathetic system. The effects are mainly unilateral, but bilateral in the tail.

Langendorf (*Centralb. f. Physiol.*, 1891, p. 129) confirms the researches of Langley and Dickinson showing that the fibres of the sympathetic chain do not simply pass through the ganglia intercalated in their course, but end there, in order, so to speak, to be, regenerated and to issue from them in a new state. Dastre (Compt. rend. Soc. de Biol.) comments on Langendorf's experiments, and claims that his researches on the same point and leading to similar conclusions were made in 1879–1884, and that the authors mentioned only confirmed his conclusions. That he, however, went beyond them and reached the general conclusion that the ganglia of the sympathetic chain are tonic and inhibitory centres. He holds that the vaso-constrictor nerves issue from them, while the vaso-dilators end *in them*, and claims analogous functional activity for the minute peripheral ganglia disseminated in the various organs.

Any consideration of the functions of the sympathetic system, at once brings forward the vexed question of *trophic nerves*, which finds an able treatment at the hands of Arndt (*Arch. f. Anat. und Physiol.*, 1891, p. 54 *et seq.*) in an exhaustive consideration of the subject from all points of view. The author holds that the existence of trophic nerves is beyond all doubt, and in support of this adduces experimental and clinical evidence. The latter, collated from a wide range of pathological observation, includes among many others, cases of paralysis with decubitus; surgical section of nerves with decubitus, lesions of the brain-stem followed by ulceration and perforation of the stomach and small intestine; jaundice after strong emotions, ascribed to trophic processes in the liver; desquamative nephritis from emotions; zoster, herpes, urticaria, due to trophic nerve influences. He holds that there must be trophic nerves, that this is proven by the numerous observations of Virchow, Nasse, Nélaton, Cl. Bernard, Légros, Onimus, Schiff, Joseph, Heidenhain and many others. Now, the question is, where are these nerves to be looked for, and how can we find them? As yet they have only been demonstrated directly on the corneal cells (Kühne), the pigment cells of amphibia and reptiles (Ehrmann), and on the cells enclosing the stomata of lymph spaces (Hoffmann), while their presence elsewhere has been assumed from physiological, but more especially from pathological data. They have been postulated, but also quite as frequently rejected, because not visibly demonstrated. This failure of demonstration is due to the fact that we had no clear idea as to what was to be looked for; and because we failed to recognize in its true character something we had long possessed, viz.: trophic nerves, that may be demonstrated at all times. To support this dictum, the author refers to his studies in 1890, proving that the nerves and the entire nervous system, developed as they are, from the ecto- and entoderm, represent a reflex rather than an automatic apparatus. Thus a given nerve is excited, *i.e.*, some process of movement passes along it and calls forth a corresponding movement. This movement passes from the place where it originated, to the end-cells supplied by the nerve, as is shown by production of heat, electricity, etc. The first thing, therefore, that is excited, or inhibited or destroyed by nerve action is metabolism, and as all the phenomena of nutrition depend upon this, it follows that the trophic processes must be influenced by any nerve excitation. Thus every nerve, and especially every centrifugal nerve, is primarily a trophic nerve, which, exciting trophic processes, leads secondarily to secretion, contraction, motion, usually supposed to be produced directly. These visible results are in reality only the outcome of trophic processes produced by the nerve. Afferent nerves act in a manner analogous to efferent nerves, by regulating the vital processes in the cells of the central nervous system, and the phenomena of sensation, consciousness, volition, etc., are the secondary but not the primary results of the impulses reaching the central cells by way of centripetal nerve fibres. Hence, according to the author, there is no necessity whatever to assume the existence of special trophic nerves, nor to ascribe trophic action to the sympathetic, when no other trophic nerves can be demonstrated. The sympathetic as a matter of course regulates the nutritive supply by its action on the vascular system, but it is trophic in the strict sense, only or especially for the smooth muscles supplied by it. Every nerve being trophic, should we retain the terms sensory, motor or secretory to designate the functional differences of nerves? For the sake of convenience, why not? But no nerve *per se* is either sensory, motor or secretory; it only causes sensation, motion or secretion by exciting its end-cell. It would therefore be better to speak of nerves as *centripetal and centrifugal*; or still better, to classify them as receptive and reactive; for upon reception of excitation and reaction thereto, brought about by chemico-physical processes, comprised under the more concise term of nutritive processes, all life is based, and this life finally is only a chemico-physical process, composed of what we briefly call assimilation, and in a wider sense of the term, secretion.

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[1] Monitore Zoologico Italiano.

[2] Jour. of Physiol. 1891, p. 5.

As the existence of special trophic nerves has been the favorite bone of contention among physiologists, while pathologists and clinicians appear long since to have reached an agreement from clinical phenomena, Arndt, in taking the broad ground that all nerves are trophic in the proper sense of the term, and that the evidences of their action as expressed in sensation, motion, secretion, etc., are but the secondary, the necessary outcome of their primary trophic function, propounds a theory that seems to embrace the greatest number of facts in a very satisfactory manner. As a "working theory" it appeals alike to the physiologist and the clinician, and offers a rational explanation of experimental as well as pathological phenomena, until now ascribed to the action or non-action of specifically trophic nerves. It certainly is a great and important step in the direction of removing this *quæstio vexato* of *trophic* nerves from the arena of physiological controversy.

The important field of reflexes has received some very valuable additions, representing perhaps the most positive gains made during the year, and certain to prove of great service in the diagnosis of a number of diseases of the nervous system.

Hughes (*Alienist and Neurol.*, 1891, p. 44) calls attention to a reflex (Onanoff's bulbo-cavernous reflex) possessing great physiological and pathological significance, because active in all healthy male adults with normal spinal cords, but absent in infants, feeble or absent in males before puberty. It is impaired by excessive venery, by masturbation, lowered in the later stages of typhoid fever. This reflex he calls the virile reflex, or penis percussion reflex. Its presence or absence is a valuable sign of the vigor, impairment, loss or abeyance of sexual power in the male. In a paper read before the Section of Medical Jurisprudence (Journ. Am. Med. Assoc., xvii, p. 727) he adds clinical evidence proving the value and significance of this reflex in diagnosis.

Jacoby (*New Yorker Med. Monatschr.*, 1891, p. 363) describes a new and interesting reflex phenomenon, produced by applying the galvanic current to the dorsal part of the hand and wrist. It consists in a short lightning-like contraction of the levator menti, when the current is closed; the contraction sometimes extends to the quadratus (both supplied by the facial nerve). In strongly marked cases, when both forearms are excited simultaneously by cathode, there is elevation of the chin, and the middle of the lip is protruded, giving to the face an expression of haughtiness or contempt.

Another addition to our knowledge of reflexes is made by Lazarus (*Arch. f. Anat. und Physiol.*, 1891, p. 19), who shows experimentally, that a reflex may be produced from the nasal mucosa to the bronchi; that certain irritants applied to the former reflexly cause a diminution of the lumen of the bronchi; and that the centrifugal part of this reflex is to be found in the vagus; also that it is more than probable, almost certain, that this lessening of the lumen is due to contraction of the bronchial muscles. Zuntz, in speaking of this reflex, points to its bearing on the respiratory process. He says, it might seem that the greatest possible width of the bronchi would be most advantageous for respiration, and that in fact, contraction of the bronchi cannot be favorable to the filling and emptying of the lungs, but it possesses an essential significance in that it frees the air from all dust particles before it reaches the alveoli. The task to free the respired air from dust will be the more difficult, the greater the amount of dust contained in it. Hence a contraction of the bronchi becomes of importance, when the respiratory air is thus contaminated. This, indeed, renders respiration more difficult, but at the same time insures pure air to the alveoli. At the hand of these experiments, we can readily understand why in a pure air, free from particles of dust, we can so readily expand the chest, and why, *per contra*, when the respired air excites the nasal mucosa by dust, by its temperature, or by carrying irritant gases, the phenomena of labored respiration make their appearance.

A new reflex, *the anal*, is described by Rossolimo (*Neurol. Centralbl.*, 1891, 257). After speaking of the segmentary arrangement of reflex function of the spinal cord and its great importance in the localization of diseases of the cord, he deems a study of a new reflex segment not superfluous on anatomical, physiological and clinical grounds. The phenomenon in question occurs upon every contact with the integument and mucosa of the anus, and is accompanied by contraction of the sphincter ani, found in all normal men without exception. The integument of the anus and its mucosa as well as the sphincter ani externus are innervated by the external hæmorrhoidal nerve, formed from the third and fourth root of the sacral plexus. Hence, we may, upon these facts assume that the center of the anal reflex is near the third and fourth sacral roots, *i. e.*, in the lower conus medullas. In the dog it is located in that part of the cord corresponding to the third sacral root, *i. e.*, in the third fourth, counting from above, of the lumbar enlargement. The reflex arc is composed of the fourth sacral nerve and the centre, which in the cord lies above the root of the fourth, near the third pair of sacral nerves. It is thus placed below all other skin reflexes, even below the plantar reflex. It is pathologically increased: in neurasthenia, with increase of all skin reflexes, in high transverse myelitis, in anatomical disease of the nervous system with increased function of the sensory apparatus. It is decreased or destroyed in multiple neuritis with extension of the process to the sacral plexus; in cases of tabes, where there is disease of the pelvic organs and a more or less pronounced anæsthesia of the anal region; in myelitis of the lower segment of the lumbar enlargement. It remains normal in functional neuroses of micturition, defecation and sexual power. A knowledge of this reflex thus facilitates on the one hand the differential diagnosis of functional and organic disturbances of the pelvic viscera, and on the other a more accurate localization of the pathological processes in the spinal cord.

A curious form of what he calls inhibition, is described by Brown-Séquard (*Arch. de Physiol. norm. et pathol.*, 1891, p. 507). He thinks that surgeons might avail themselves of it, should the same condiions obtain in man, as found experimentally in the ape and dog. His experiments on these animals show that wounds produced by cutting or burning, may, after excitation of the larynx or its sensory nerves, become analgesic, and remain in that condition for several days, and even two weeks or more. He finds that wounds inflicted either before, during or a short time after certain irritations of the laryngeal mucosa or its sensory nerves, always present a total loss, or else a greater or less diminution of sensibility to painful impression.

The same author (*loco. citat.*, p. 805) supplements the foregoing by experimental evidence showing that in the ape and dog, a general reflex analgesia may be produced by a traumatic or mechanical irritation of the integument of the neck, the trachea, and especially of the larynx or the superior laryngeal nerves, and also by irritation of the laryngeal mucosa by chloroform, cocaine, etc. Should these results be verified in man, surgeons would be placed in possession of a ready and safe method for the production of local analgesia.

Wedensky (*Compt. rend. Acad. des Sciences*, 1891, p. 805), from a series of experiments undertaken with a view to solve the question in which part of the neuro-muscular apparatus inhibition is produced, is led to the conclusion, that the peripheral nerve endings, and not the muscular fibres pass into a state of inhibition, when frequent and strong excitations are applied to the neuro-muscular apparatus.

The physiology of the medulla oblongata has received attention at the hands of Spencer (*Proc. Royal Soc.*) whose researches were for the purpose of connecting more closely clinical signs with pathological changes in the medulla oblongata by localizing in the floor of the fourth ventricle the centers influencing respiration and circulation. He finds that the *respiratory* center lies along the middle line, extending for 2 mm. on either side, while that for *expiration* lies along the lateral part of the ventricle 2 to 3 mm. from the middle line. Upon the other hand, respiratory rhythm is slowed by excitation of an area lying over the continuation of the postero-median column, as the latter separates from its fellow on the opposite side, and that part of the floor of the ventricle close to the inner border of the column. Its central part is between 1 and 2 mm. from the column and between 2 and 3 mm. from the middle line.

Cardio-inhibition, although it may be produced all over the floor of the fourth ventricle, and also in rear of the calamus, is best marked over the posterior third of the ventricle, and over the inner margin of the continuation forward of the postero-median column. The chief depressor center is located in the hinder part of the floor between 1 and 4 mm. in front of the calamus, while rise of blood pressure is most frequent upon excitation of the floor from 4 mm. in front of the calamus to the anterior border of the ventricle.

The question of the existence or non-existence of a special center for vomiting, a long disputed point in the physiology of the spinal axis, appears at last to have been successfully solved by Thomas (*Arch. f. path. Anat.*, 1891, p. 49). At any rate, the experiments seem to leave no room for doubt that such a center exists in the dog and cat. He demonstrates that there is an independent vomiting center, as held by Mayer; that this central apparatus occupies a space 5 mm. long by 2 mm. wide, lying in front and rear of the calamus scriptorrius and within the deeper parts of the medulla oblongata. It is functionally and anatomically independent, and represents a mechanism of a higher order connected with numerous other centers of a subordinate character, and capable through excitation of the latter, to produce its characteristic end effects. This, if correct, removes the question of a vomiting center from the region of controversy and hypothesis, where in spite of numerous investigations, it has remained heretofore, and thus marks a distinct advance in our knowledge of the functions of the medulla oblongata. It also disposes of Hlasko's theory (*Inaug. Dissert, Dorpat*), that the corpora quadrigemina are the centers from which the impulses causing contraction of the cardia proceed by way of the vagi and cord.

Ott (*Jour. of Nerv. and Ment. Dis.*) adds to our very meagre knowledge of the functions of the thalamus opticus, some experimental data pointing to its vasomotor influence, since section immediately in front of the pons, causes a fall of tension in the blood vessels. He thinks it quite probable that certain peripheral nerves stand in reflex relation to vasotonic centers in the thalami, which latter exert a vasotonic action upon the medullary dominant vasomotor center. These experiments throw some light on the obscure relations of the base of the brain to the chief vaso-motor center.

As to brain physiology, some important observations must be noted. Danilewsky (*Centralbl. f. Physiol.*, 1891, p. 1–4) adds to our knowledge of the electro-motor processes in the cerebrum, experimental evidence, proving that the conditions of excitation produced there by external irritants, are accompanied by definite electro-motor phenomena, the latter being regarded as objective signs of psychical processes, that subjectively appear as sensations, motions, hallucinations, etc. Thus, even feeble stimulation of a sense organ or of the internal sensory nerve (the vagus) produces an evident change in the electro-motor conditions of a definite region of the cortex, usually on the opposite side, which is set aside by deep morphia or chloroform narcosis. The *electro-motor* method of investigation is of value, not only in the question cerebral localization, but also in the investigation of the processes of excitation as such in the cerebral cortex.

Ireland (*Brit. Med. Jour.*, 1891, p. 1167) discusses the discordant action of the double brain, and shows that, one hemisphere remaining healthy, the other being diseased, the integrity of the intellectual, moral and emotional faculties may be preserved, and perhaps better preserved with a total destruction of one hemisphere, than with a diseased hemisphere transmitting irritation to its fellow.

Some interesting points on the cerebral circulation have been brought out by de Boeck and Verhoogen (*Institut. Solvay*) by studying some of the conditions under which it may be altered. They reach the following highly practical conclusions: In asphyxia the amount of blood in the brain is increased throughout, not because of increase of general blood-pressure, but from active dilatation of the cerebral vessels. Injection of sulphuric ether produces increase of arterial blood pressure, leading to a more abundant blood supply, while intravenous injection of morphia does not alter the total amount of blood in the brain, but changes the manner of its distribution, inasmuch as the cortex becomes anæmic, while the base is rendered hyperæmic.

Cybulsky (*Centralbl. f. Physiol.*, 1891, p. 834) holds that v. Bergmann's investigations on brain pressure and his theory thereon, afford a sufficient explanation of the subject, fully corresponding to clinical observation. Surgeons must be surprised to learn that Adamkiewicz looks upon brain pressure as impossible, even asserting that when local pressure is produced by inserting pieces of laminaria into the cranial cavity, there results, not anæmia, but hyperæmia. Cybulsky's investigations lead him to conclude that intra-cranial pressure is always positive, presenting considerable variations due to the state of the cerebral circulation. In dogs the variation is between 72 mm. to 190 mm. H_2O. Intra-cranial pressure, *i. e.*, pressure of the cerebro-spinal fluid, may be greatly increased by diminishing the cranial space by foreign bodies, *e. g.* a hæmorrhage from an artery outside of the dura mater. If under a certain degree of blood pressure, a 0.6 per cent. solution of sodium chloride, or oil be introduced beneath the dura, or if they, or an india-rubber bladder be forced between dura and bone, we see, when pressure is equal to that of the blood in the carotids, the symptoms of increased brain pressure, slow pulse, increased arterial pressure, acceleration, followed by slowing and finally cessation of respiration, loss of consciousness and death, with coma and tetanus. The rapidity of flow in the internal carotids is decreased as soon as intra-cranial pressure is increased; and again accelerated when with the same intracranial pressure, general blood pressure is increased. Whenever intra-cranial pressure becomes higher than the arterial, there is cessation of the cerebral circulation. These changes in the rapidity of the flow show that increased intra-cranial pressure leads to brain anæmia, and the symptoms *mentioned are the results of this* anæmia. (This fully agrees with v. Bergmann.) Injection of neutral or ammoniacal salt solution into the cerebral vessels does not produce these results. (This contradicts Adamkiewicz). He produced local pressure in rabbits by placing pieces of laminaria within the skull, and is convinced that this depression of brain substance is connected with displacement and disfiguration of the brain, and also with pressure on the blood vessels and ventricles. Such pressure remains latent only, when the volume of laminaria introduced does not exceed $\frac{1}{19}$ to $\frac{1}{20}$ of the volume of brain. If greater, there are changes in the circulation, numerous extravasations, producing death sooner or later. Adamkiewicz' assertion that the skull space may be decreased by $\frac{1}{6}$ or $\frac{1}{4}$, without production of death, depends as he thinks, on erroneous measurements.

That essentially modern offspring of our science, dating its birth from the discoveries of Fritsch and Hitzig (1870), and truly inaugurating a new era in the physiology and pathology of the brain, viz.: the doctrine of cerebral localization, or if you please, "scientific phrenology," *has not fallen behind* in the general advance of nerve physiology. Its importance *per se*, as a new physiological doctrine, and the brilliant results of its application in brain surgery, have made its study not only of great inherent interest, but of the highest practical value. While indeed, accepted by the majority of physiologists, it still finds able opponents in our ranks, and the literature of the past year shows that it yet lacks the seal of unanimous approval.

Perhaps the most important work on localization published during the year is presented by Gotch and Horsly (*Philosoph. Trans.*, 1892, p. 269–526) being a magnificent monograph entitled "The Mammalian Nervous System, its Functions and their Localization Determined by an Electrical Method." It is the substance of the Croonian lecture, and after a full description of the method and plan pursued by the authors, it gives a full account of the important results of their investigations. It is impossible, within the limits of this paper, to do even scant justice to such a work by attempting to summarize its contents. It can only be fully appreciated by careful study, which, however, will fully repay for the time and labor employed by imparting information absolutely essential to a clear understanding of modern nerve physiology and its methods.

Beevor and Horsley (*Philos. Trans.*, 1891) in another finely illustrated monograph, give an extensive account of their experimental investigation of the motor paths in the internal capsule of the dog's brain. They show that the arrangement of the motor fibre corresponds exactly to the arrangement of the motor areas in the cortex. They also disprove that the trunk muscles, and those of the tongue of each side possess bilateral innervation, as heretofore supposed.

Donaldson (*Am. Jour. of Psych.*, 1891, p. 113) publishes an abstract of six lectures on cerebral localization, aiming especially to show the bearing of recent anatomical investigations on this point. After a description of Golgi's method of investigation of nerve structures, he gives a resumé of the advances in our knowledge of nerve cells and fibres and their mutual relation, presenting an excellent picture of the architecture of the cerebral nervous system. He next considers motor and sensory localization in man and ape, and discusses the results of experiments in animals lower in the scale, concluding with a consideration of the connection between localization and psychology.

These lectures form a valuable addendum to physiological literature, and the author deserves our thanks for the clear and concise presentation of the question in all its bearings.

Santmeyer (*Zeitsch. f. Biolog.*, 1891, p. 177) adds to our knowledge of conduction paths, by a description of the secondary degeneration following extirpation of motor centers in the dog. He finds that unilateral extirpation of motor centers frequently, but not always, leads to bilateral degeneration, and that the degeneration on the side of the lesion may occur as early as that in the opposite tracts. The degeneration on the same side has not as yet received a satisfactory explanation. The degenerated fibres appearing in the later stages in the anterior and posterior column, are not in direct connection with the extirpated centers. There are no anterior pyramidal tracts in the dog. The lemniscus, the nuclei of Goll's and Burdach's columns, the anterior spinal roots and the peripheral nerves are not attacked by secondary degeneration.

Bernheim (*Rév. Méd. de l ést.*, 1891, p. 513) illustrates motor localization in the cerebral cortex by a case of left brachio-facial monoplegia, followed by an attack of apoplexy with right hemiplegia. History and autopsy confirm the localization of motor centers in man as given by Charcot and Pitres. Brachio-facial monoplegia coincides with lesion of the inferior half of the ascending frontal convolution. 2. Sacral and lingual monoplegia depends on lesion of the inferior extremity of the motor zone, especially of the ascending frontal. 3. Brachial monoplegia on a limited lesion of the middle motor zone, especially of the ascending frontal. 4. Crural monoplegia on a very limited lesion of the paracentral lobule.

Shaw (*Brit. Med. Jour.*, 1891, p. 946) had the somewhat rare opportunity of examining the brain in a case of an old amputation of the thigh, and found atrophy of the cerebral cortex in the region corresponding to the leg center, with absence of the giant pyamidal cells of Betz from the ganglionic layer of the atrophied region.

While it is generally held that the auditory center is located in the first, or in the first and second temporal convolution, a view, however, not accepted by all, the report of a case bearing upon this point by Mills (*Brain*, 1891, p. 465) with history and autopsy becomes of great value. His conclusions from a study of the case are, that the center for word hearing is situated in the posterior thirds of the first and second temporal gyri, just in front of, or in a line with the posterior extremity of the horizontal branch of the Sylvian fissure. A lesion, confined to this region of the left hemisphere, produces complete, or almost complete word deafness. The field for all auditory memories is much larger, including at least, the posterior two-thirds of the first and second temporal. While these centers are most highly developed in the left hemisphere, destruction of the centers of both sides is necessary to produce complete brain deafness. The other temporal convolutions are not concerned in central audition. A lesion limited to the center for word hearing, causing word deafness, also causes paraphasia and paralexia, but it does not necessarily cause inability to recall words by other means, for instance, through their visual signs; in such cases probably the meaning of the word is understood, although the name cannot be properly verified in consciousness. Lesions causing word deafness will eventually lead to secondary atrophy of the speech and oro-lingual centers on the motor side of the brain, and to atrophy of the association tracts between the sensory and motor hearing-speech centers. The retro-insular convolutions are closely related with subdivisions of the first temporal gyrus, the most posterior being continuous with the posterior two-thirds of the first temporal gyrus.

The existence and localization of *cerebral* heat centers, first demonstrated by Landois and Eulenburg, has led to renewed investigations, notably so by White and Ott. White (*Jour. of Physiol.*, 1891, p. 271) discussing the position and value of those lesions of the brain, causing rise of temperature, states that after injury to the optic thalamus, produced by a blunt probe, the rise of temperature is slight as compared with that of a similar injury to the corpus striatum, while injury to the septum pellucidum causes a marked rise. Injury to the cerebellum produces no rise, while injury to the posterior part of the cerebral cortex has an effect more marked than injury to the frontal portion. There is a marked rise from injury to the crus cerebri.

Ott (*Journ. of Nerv. and Mental Diseases*,, 1891, p. 483) finds that the tuber cinereum is the centre for polypnœa and thermotaxis, and on the basis of his own researches revises the function of the thermotaxic centres as follows: In the fore-brain, the cortex contains thermo-inhibitory centres at the sulcus cruciatus and the Sylvian fissure. Thermogenic centres are found at the base in the caudate nucleus, the gray matter of the septum lucidum, and the gray matter in front and beneath the caudate nucleus. The interbrain contains thermolytic, polypnœic and vaso-motor centers in the tuber cinereum; the afterbrain: thermolytic, respiratory and vaso-motor centres; the spinal cord: thermolytic, sudorific and thermogenic centres.

The localization of sensory centres is still a subject upon which opinions are widely apart, as may readily be seen by the following:

Saville (*Brain*, 1891, p. 270) concludes from a highly interesting case of anæsthesia with trophic changes in which the lesion was found to be strictly localized, as shown by the autopsy, being precisely beneath those parts of the cortex corresponding to the gyrus fornicatus and part of the marginal convolution, in their entire extent, and beneath the anterior half of the præcuneus; cutting off all direct communication between the gyrus fornicatus and the white matter beneath, and in front between the gyrus fornicatus and the marginal convolution and centrum ovale, that the gyrus fornicatus is the centre for common and tactile sensations, and that its destruction may produce loss of sensation without loss of motion to any serious extent. (This case, therefore, is in line with the conclusions arrived at by Horsley and Schäfer.) He also concludes, that a destructive lesion in that portion leads to vaso-motor or trophic changes in the skin and subcutaneous tissues of the opposite side of the body, and that therefore these convolutions may possibly be the centre, not only for sensation, but for trophic influences transmitted to the opposite side of the body.

Per contra Knapp (*Boston Med. and Surg. Journal*, 1891, p. 430) presents the details of a case, tending to show that the centres for sensation of touch, pressure, motion and position are to be looked for in the central convolutions. The lesion involved the middle third of the left ascending parietal convolution. Sensations of pain and of temperature were not abolished. The limbic lobe was not involved in this case, as it presented no signs of inflammation. These results accord singularly with those of Munk's experiments, although Knapp does not fully accept Munk's opinion, that the cerebral cortical region is purely sensory.

Schtscherbach (*Centralbl. f. Physiol.*, 1891, p. 289) attempts to solve the difficult question of localization of the centre of taste in the rabbit, and finds that injury to an area extending from 2 to 3 mm. in front and behind the line of the coronal suture and vertically from the longitudinal fissure to the lower edge of the brain, causes loss of *taste* in the opposite side of the tongue, lasting for six days at most.

As opposed to the doctrine of localization, we find Lane (*Am. Journ. of Insanity*, 1891, p. 50), who holds, speaking of the so-called motor area of the cortex, that the theory of cerebral localization is not supported by sufficient evidence, and therefore concludes that, upon the facts presented, it is simpler and more consistent, therefore wiser, to consider the cortex (so far as explored) as an entirely sensory region, the seat of memory and will.

While Bennett (*Dubl. Journ. Med. Sci.*, 1891, p. 337) records the history of a case of cerebral tumor, illustrating the difficulties of cerebral localization. The tumor had destroyed the centres of volition governing the left arm and also those of other parts of the left side of the body, obliterating the lower two-thirds of the fissure of Rolando, and involving nearly all of the lower half of the ascending parietal; nearly the entire ascending frontal convolution was lost in the tumor, yet never during life was there any paralysis of the limbs. He asks, how are such facts to be reconciled with the present views of cerebral localization?

We finally must consider what has been done in advancing the physiology of the cerebellum, that fruitful field for speculation, to which numerous hypotheses have assigned at some time or other the *rôle* of being the seat of nearly every functional manifestation of the central nervous system, and which even now, in spite of its ready accessibility, of countless experiments, of an immense amount of clinical observation, and of the fact that some of our most skilled and assiduous investigators have made it their special object of research, is an organ whose physiological significance is enveloped by doubt and uncertainty. For we must confess that we have gained but little positive knowledge since the brilliant experiments of Flourens opened up the question of cerebellar function, and pointed to its connection with the motor apparatus. Whether the latest contributions have brought us much nearer to a solution of this perplexing question may perhaps, and not without reason, be doubted, nevertheless the two most striking and exhaustive monographs dealing with the physiology of the central nervous system published during the year, and presently to be considered somewhat in detail, aim to offer a solution of the question of cerebellar function as a whole, and their authors endeavor to establish theories, which although widely apart, are well presented, clearly formulated and supported by ingenious arguments, that may or may not be deemed convincing or acceptable to physiologists. Before touching upon these, however, it will not be amiss to make brief mention of a few of the experimental data on cerebellar function, that have been published during the year. Thus:

Borgherini (*Neurolog. Centralbl.*, 1891, p. 649) describes a novel phenomenon, consisting in a sleep-like state induced in dogs after removal of the cerebellum, by bandaging the eyes with a thick cloth. In this condition the animal does not respond to any mechanical or tactile excitation. The author believes that the absence of visual impressions produced by the bandage causes in the animal a consciousness of complete inability to move, and forces it into absolute immobility; it has lost the will to move.

Lange (*Pflüger's Arch.*, 1891, p. 615) shows experimentally that the symptoms due to ablation of the cerebellum must be strictly separated from those after destruction of the semicircular canals, thus opposing the views of Baginsky, who regards the auditory symptoms in the light of brain disturbances, and of Loeb, who has lately again supported the older view, that the cerebellar symptoms may be referred altogether or in greater part to lesion of the auditory nerve.

We now pass to a consideration of the two monographs that represent the most noteworthy additions to the literature on the cerebellum and its functions which have made their appearance for several years past. The first of these, by Luciani, is a volume of some 300 pages, entitled "Il Cerveletto," of which

Pescarolo (*Arch. Ital. de Biol.*, xvi, p. 289) gives a very full and clear abstract. The author presents a series of new experimental studies on the normal and pathological physiology of the cerebellum, with new facts that, according to Luciani, demonstrate the error of the doctrines now held, and tending to assist the physiologist and clinician in the interpretation of certain phenomena. The fundamental fact derived from these researches and from the best clinical and experimental observations is, that absence of a more or less extensive or deep portion of the cerebellum, or its total absence even, is not followed by any paralysis, partial or total, of either sensation or motion, or by disturbance of the intellect or volition. This leads him to look on the cerebellum, with all its dependencies, as a small system, possessing a comparative autonomy, and to a certain point, distinct from the great cerebro-spinal system. It is not an intermediate organ, intercalated along the great tract of cerebrô-spinal transmission, but rather an appendicular organ, which, by means of different afferent routes, is directly or indirectly *en rapport* with the peripheral sense-organs, and by special efferent routes has a direct connection with certain collections of gray matter of the cerebro-spinal axis, and indirect connection with the peripheral apparatus of voluntary movements. It, like the rest of the cerebral nervous system, is an organ with bilateral action, but mostly direct, unlike the mainly crossed action of the cerebral hemispheres. Its influence is not limited to the muscles of station and locomotion, but extends to all voluntary muscles, though not in the same degree, its action being more pronounced on the muscles of the lower limbs and those fixing the spine. The cerebellum is an homogeneous organ as to function; *i.e.*, every segment has the function of the whole, and in absence of the rest may supplement them, provided the normal relations to the afferent or efferent tracts be not altered.

As absence of the cerebellum, whether in animals or man, is not followed by paralysis, or imperfection or lowering of the external or internal sense, it is believed that it does not possess sensory function; still, considering the inherent imperfection in the methods employed to examine the different sensations in animals, and the difficulties of the subjective examination of the sick, because of the ready *suggestionabilité* of the subjects, the author abstains from pronouncing on this question, and leaves it to future investigations. The grand total of results shows, that ablation of the cerebellum is always followed by neuro-muscular phenomena of an asthenic, atonic and astatic character, hence the influence of this organ upon the rest of the system is complex in character, procuring, 1, an increase of potential energy at the disposal of the neuro-muscular apparatus (sthenic action); 2, an increase of their tension during functional pauses (tonic action); 3, an increase of the rhythm of elementary impulses during action, with a normal fusion and regular continuity of the act (static action). And as every functional excitation of living elements is necessarily accompanied by a modification of nutritive movements it follows, that the complex action of the cerebellum is connected with a trophic action directly or indirectly. This trophic influence is naturally slow, tranquil, continuous, yet varied in intensity in the normal condition of the organism, and the functional influence of the cerebellum, normally exerted upon the other nerve centres, is likewise slow and continuous. The activity of the cerebellum is not specific, or *sui generis*; it is the common, fundamental activity of the entire nervous system.

The peripheral nerve ganglia of the sympathetic system, possess fundamentally an analogous relationship to the functions of vegetative life, as demonstrated by Luciani's researches on the functions of the ganglia of the posterior roots, which are claimed to have shown, that, like the cerebellum they possess a trophic action and also the function of reinforcement, both to be considered as different manifestation of the same process, that constitutes the unexplored and as yet mysterious field not only of the physiology of the cerebellum and of the intervertebral ganglia, but of that of the nervous system in general.

The other work referred to, differs from the foregoing, being of a decidedly revolutionary character, as the views expressed by its author are opposed to all that is held to be almost axiomatic in cerebellar physiology, the doctrine, that this organ does not take part in the mental processes. This volume of some 600 pages is by Courmont, and bears the title: "Le Cervelet et ses Functions, Paris, 1891." It received what may be called a preliminary review at the hands of Prof. Forel (*Bull. Med. du Nord.*, 1891, p. 244), from whose article the following synopsis has been obtained. According to Ford, the author, one day, while sitting at the bedside of a patient, was seized by an original and bold idea of cerebral physiology, which he formulated into an hypothesis of the functions of the cerebellum, according to which the latter is an organ *de sensibilité* and endowed with psychical functions. To verify this hypothesis, and judging that vivisection (although direct experiment was not neglected) because of the mutilations attending it, supplied less clear results in questions of cerebral localization, than those obtained from a study of clinical facts followed by autopsy; he searched, to use Forel's words, with the patience worthy of a benedictine monk (some might say, worthy of a better cause) through all the original French and foreign observations on cerebellar disease, and was astonished to find that they all confirmed his *á priori* conclusion. Again certain anatomical considerations, and experiments conceived in quite a different spirit and conducted with another end in view, equally supported the hypothesis. Comparative anatomy also supplied serious arguments in favor, and finally direct experiments brought all the confirmation they could offer to the author. Now, since the time of Flourens, the functions of the cerebellum are held to be those of coördination, but the author says, if setting aside all prejudice established by science, some one should propound to a physiologist the following: Given, an important encephalic organ, nearly identical in structure with the cerebrum, and not only placed alongside of but associated with it by close and intimate anatomical connections, should not such an organ possess functions analogous to those of the cerebrum? Clearly, the answer would be: *Yes.*

Now, the cerebrum is a motor organ, and at the same time that of thought, and Courmont holds, that the cerebellum also is the general receptacle for sensations and presides over a special class of psychic manifestations. Dividing the faculties into rational and emotional, he holds that reason, judgment, volition, etc., belong to the cerebrum, while the emotions, love, fear, hatred, etc., have their seat in the cerebellum. (Jessen of Erfurt, formulated this idea in 1869, but advanced no proof in its support.) Courmont adduces in proof arguments from anatomy, based on analogy and held to establish a probability only; thus the cerebrum and cerebellum are each composed of two hemispheres, each contains a central white, and a peripheral gray substance. In both, the nerve fibres arise from nerve cells and form peduncles passing to the spinal cord. True, the cerebellum is much smaller but its gray substance is more abundant than the white. The comparative weight of the cerebellum is less in the male than the female, and in the latter the emotions predominate. Finally the motor columns of the cord pass to the cerebrum, the sensory to the cerebellum. And Kölliker is cited as holding that the anatomical disposition of the cerebellum illy accords with the theories of its motor functions. As to experiment, Vulpian and Ferrier are cited, to prove that animals deprived of the cerebellum still experience pain and give signs of emotion. But clinical observations with autopsies supply the main foundation of the new idea, as a like observation first gave birth to it, and as this case shows more clearly the author's method of reaching conclusions, it may properly be briefly reproduced: A woman with puerperal mania presented a singular condition. She responded sensibly and rationally to all questions bearing on external facts, but at once became delirious when a word was pronounced, that set her emotional faculties into play. Now, rejecting the idea of two different classes of cells in the cerebrum, because the circulatory disturbance presumably producing the puerperal mania, could not affect one class, without at the same time acting upon the other, our author concludes, that there must be two organs, one presiding over reason, the other over emotion, and in his further search he finds divers psychical symptoms in cases of cerebellar lesion, such as changes of character, inexplicable irascibility, sadness without external cause, etc., claimed in support of the theory. As to experiment, he finds that ablation of the cerebellum in rats is followed by apathy, while its complete removal, producing inflammation of the remainder exaggerates the emotional conditions. The comparative and absolute highest development of the cerebellum in man is also held as proof in his favor. Other considerations are brought to bear; thus in examining the origins of the cranial nerves, he finds that those coming in part or altogether from the cerebellum, cerebro-peduncles or tubers, are the ones most affected in the emotions: the lachrymal, patheticus, facial, auditory. The anatomical disposition of the last affords an original explanation of the fact, that music, of all the arts, has the highest power to move man by means altogether exclusive of reason. Finally, the cerebellum, like the cerebrum, receives sensory impressions, as shown by the origin of the auditory nerve, the trigeminus, the posterior columns of the cord.

The psychical and sensory theory of the cerebellum admitted, our conception of the cerebral nervous system is according to Courmont, greatly simplified according to the following plan: there are two grand divisions, the spinal cord and the encephalon. Each is composed of two parts: the cerebrum and the anterior spinal cord are motor, the cerebellum and the posterior cord sensory, and upon these functions the two psychic functions, volition and emotion are based.

The motor disturbances from lesions of the cerebellum are explained by the supposition, that the posterior encephalon acts by a reflex mechanism upon the anterior encephalon, an action analogous to that of the posterior cord on the anterior; hence we see incoördination from experimental lesions of the cerebellum, and uncertainty of gait in cerebellar disease. Thus in a general point of view, the cerebellum becomes a highly important, but *indirect* factor in normal motility.

Such is a brief, and perhaps imperfect outline of the plea offered by Courmont in behalf of his theory of cerebellar functions, intended to take the place of what is held to be fairly well established by experimental researches and clinical observation, viz., that this organ is not connected with the phenomena of sensibility or thought, but only with those of coördination of motion, its influence being exerted especially upon those muscular actions that maintain the equilibrium of the body. That his theory is simplicity itself, goes without saying, that it is not altogether new, is shown by the author's reference to Jessen,[3] but it seems very doubtful, whether it will succeed in gaining acceptance in the place of what certainly seem to be logical conclusions as to cerebellar function, derived from generally admitted physiological and pathological facts. The author's work, however is a highly instructive example of the manner in which an enthusiastic and ingenious mind, bent upon establishing an *a priori* hypothesis in physiology, may find an abundance of material in every direction, that readily lends itself to supply the arguments in its favor.

There are many other points of interest connected with nerve physiology, that might well claim attention, especially those bearing on the special senses, but your kindly patience has already been taxed too much, to permit of any further trespass upon your time.

Summing up the progress made, not only in the physiology of the nervous system, but in all other fields of our science, we see in every direction a steady advance, a gradual, but no less certain and solid gain in our knowledge of the functional activity of the organism. And it is particularly gratifying, in fact a matter of just pride, to be able to note that the original investigations of American physiologists have added no little to this increase, the fruits of their scientific labors being fully equal in value to those of their foreign colleagues.

In conclusion, may we not express the hope, that now, with this new, independent Section of Physiology at their service, they may in future select its meetings and proceedings as the channel, through which they can most appropriately communicate the results of their observations and research to the scientific world?

To Remove Nitrate of Silver Stains from the Fingers.—First paint the blackened parts with tincture of iodine; then, by applying ammonia, the iodine will be bleached, leaving white instead of black stains of nitrate of silver.

Canada has had a single examining board for more than twenty years. During this period it has licensed 1,300 regulars and 19 homœopaths.

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[3] See also Gowers, Diseas., of the Nerv. Sys., Amer. edition, p. 495.

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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(*Continued from page 604.*)

Case 135.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age eight. Left ear. Chronic otorrhœa; vomiting; convulsions; paralysis of left upper eye-lid; limbs all weak; pain in left ear; dull; drowsy; semi-comatose; coma. Death.

Autopsy.—Abscess in left cerebral hemisphere.

Case 136.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age twenty-six. Right ear. Purulent otorrhœa; delirium; episthotonos; coma. Death.

Autopsy.—Abscess in under surface of middle cerebral lobe.

Case 137.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age fifty-one. Left ear. Purulent otorrhœa; cough; pain in limbs; pulse quick; convulsions; coma. Death.

Autopsy.—Abscess in left cerebral hemisphere.

Case 138.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age twenty-three. Left ear. Epilepsy; convulsions; pain in head; fever; intense agony; convulsions. Death.

Autopsy.—Abscess. Coagulum of fibrin and blood in left lateral sinus.

Case 139.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age fifty-four. Right ear. Epilepsy; pain in forehead; stupor; lost consciousness and sensibility; convulsions. Death.

Autopsy.—Abscess in middle lobe of right hemisphere.

Case 140.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age seven. Left ear. Purulent otorrhœa; great debility; epilepsy after syringing; epilepsy continued. Death.

Autopsy.—Abscess in under part of left lobe of the cerebellum.

Case 141.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age not given. Right ear. Purulent otorrhœa; cessation of discharge; chills and collapse; pain in right side; stupid; coma. Death.

Autopsy.—Abscess in right middle lobe.

Case 142.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age twenty-six. Right ear. Chronic otorrhœa; pain in ear; headache; dizziness; coma. Death.

Autopsy.—Abscess in upper part of right cerebral hemisphere.

Case 143.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Female, age nine. Left ear. Purulent otorrhœa; fever; vomiting; pain in ear; paralysis of left side; coma. Death.

Autopsy.—Abscess in middle lobe of left side of cerebrum.

Case 144.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age thirty-two. Chronic otorrhœa; chills; fever; abscess behind ear; stupor; convulsions. Death.

Autopsy.—Abscess in middle cerebral lobe. Pus between diseased mastoid and dura-mater.

Case 145.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age thirty-five. Right ear. Chronic otorrhœa; caries of the mastoid; polypus in external meatus; pain in back of head, neck, and shoulders of the right side; stupor; coma. Death.

Autopsy.—Abscess in right lobe of cerebellum.

Case 146.—Extract from Treatise on the Ear, by Roosa. Reported by Gull and Sutton. Male, age thirteen. Right ear. Purulent otorrhœa; fever; headaches; thick speech; hemiplegia; vomiting; drowsiness; pain; stupor. Death.

Autopsy, Three abscesses in right lobe of the cerebellum.

Case 147.—Extract from Treatise on the Ear, by Roosa. Treated by J. Orne Greene. Male, age twenty-eight. Right ear. Chronic otorrhœa; paralysis of the muscles of face after walk in rain; pain on right side of head; vertigo; chills; nausea; vomiting; coma. Death.

Autopsy.—Abscess in right half of the cerebellum. Roof of tympanum bare, but not carious.

Case 148.—Extract from Treatise on the Ear, by Roosa. Treated by J. Orne Greene. Male, age twenty-two. Right ear. Acute purulent otorrhœa; pain in ear; headache; difficulty in swallowing; vertigo; paralysis of right hypoglossal nerve.

Autopsy.—Meningitis. Caries of inner table of skull. Cochlea, and semi-circular canals filled with solid red mass.

Case 149.—Extract from Treatise on the Ear, by Roosa. Treated by Farwick. Female, age thirty-six. Left ear. Chronic otorrhœa; pain in ear and left side of head; vertigo; delirium. Death.

Autopsy.—Abscess in left cerebral hemisphere. Caries of the roof of tympanum.

Case 150.—Extract from Treatise on the Ear, by Roosa. Treated by Schwartze. Female, age eighteen. Left ear. Chronic otorrhœa; pain in ear; chills; region of left jugular sensitive; pain in swallowing; nausea; uvula œdematous; vomiting; singultus; left side of neck œdematous and painful on pressure. Slight convulsive movements of the left arm. Death.

Autopsy.—Clots in superior longitudinal and superior petrosal sinuses. Old thrombus in left lateral sinus.

Case 151.—Extract from Treatise on the Ear, by Roosa. Treated by Schwartze. Male, age three. Left ear. Purulent otorrhœa; meningitis. Death.

Autopsy.—Œdema of pia-mater. Left lateral sinus contained a thrombus. Carious bone in left auditory canal.

Case 152.—Extract from Treatise on the Ear, by Roosa. Treated by Schwartze. Female, age fifty-four. Right ear. Chronic otorrhœa; pain in ear and head; vomiting; vertigo; coma; ptosis of right side. Death.

Autopsy.—Hyperæmia of membranes of brain. Oedema of pia-mater. Thrombus in right superior petrosal sinus.

Case 153.—Extract from Treatise on the Ear, by Roosa. Treated by von Tröltsch. Male, age fifty-three. Left ear. Chronic otorrhœa; polypus; pain in ear and head; coma. Death.

Autopsy.—Abscess in left middle cerebral lobe, connecting with petrous bone.

TABULAR REPORT OF PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROM-

No.	Where Reported.	Surgeon's Name, etc.	Sex.	Age.	Ear.	Previous History.
1	Original	Allport, Minneapolis	F	25	L	Chronic otorrhœa for twenty-two years
2	Original	Allport, Minneapolis	M	23	R	Acute purulent otorrhœa
3	Original	Allport, Minneapolis	M	22	R	Chronic otorrhœa
4	Original	Allport, Minneapolis	M	34	R	Chronic otorrhœa, with acute exacerbations
5	Original	Allport, Minneapolis	M	25	R	Blow on ear, followed by acute purulent otorrhœa
6	Original	Allport, Minneapolis	M	35	L	Mental condition bad on entrance to hospital, thus obscuring previous history; chronic otorrhœa; pain in head
7	Arch. Otology, 1885	Hedinger, Stuttgart	F	63	R	Chronic otorrhœa; fibrous tumor in meatus; numbness r. side of neck and face. Patient disappeared for years. On reappearance, had pain in ear; aural hæmorrhage streaked with pus; total deafness r. ear; pain in back of head; pain and swelling of temporal region
8	Arch. Otology, 1885	Hedinger, Stuttgart	F	50	R	Chronic otorrhœa
9	Arch. Otology, 1886	Truckenbrod	M	28	L	Chronic otorrhœa; vertigo
10	Lancet, 1885	Hilles				Chronic otorrhœa
11	Lancet, 1880	Allen	F	19	R	Chronic otorrhœa; deafness
12	Gazette des Hopit., 1880	Miot, Paris	M	35	R	Chronic otorrhœa; tubercular
13	Jour. Anat. and Physiology, vol. xiv	McBride & Bruce	.	.	R	Chronic otorrhœa
14	Arch. Otology, 1879	Kipp	M	23	R	" "
15	Am. Otol. Society, 1882	Mathewson, Brooklyn	M	11	.	" "
16	Am. Otol. Society, 1882	Merrill, Albany	M	32	.	
17	Am. Jour. Med. Sciences, 1882	Prentiss	M	32	R	Chronic otorrhœa
18	Am. Jour. of Otology, 1882	Field, England	M	42	L	" "
19	Phila. Med. Times, 1881	Harlan	F	14	L	" " l. facial paralysis
20	Edinburg Med. Jour., 1881	Sinclair	M	22	R	" " caught cold
21	Australian Med. Jour., 1881	Robertson	M	39	L	
22	New York Med. and Sur. Brief, 1879	Moore	M	50	R	Chronic otorrhœa
23	Glasgow Med. and Sur. Jour., 1880	Barr	M	17	L	" "
24	Jour. of Anat. and Phys., 1888	McBride & Bruce	F	.	R	" "
25	Gazette des Hopit., 1885	Jaccoud	.	.	R	
26	Von Langenbeck's Arch., vol. 28	Gluck	.	.	R	Chronic otorrhœa; aural hæmorrhages
27	Arch. Otology, 1880	Michael, Hamburg	M	.	L	Blow on head years ago; recovery ensued in a few days, with occasional pain on left side of head; discharge from both ears; deafness
28	Lancet, 1880	Morris	M	31	L	Chronic otorrhœa; deafness
29	Arch. Otology, 1880	Frankel	F	23	L	" "

BOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

Present History.	Result.	Autopsy.
Deafness; bony narrowing of meatus; pain in head; chills; temp. and pulse medium; slight delirium; mastoid opening; found pus	Death .	Necrosis found on outer surface of mastoid, squamous, frontal and sup. maxilla; on inner surface of squamous; on upper part of petrous; on petrous *over middle and internal ears; on inner plate of mastoid. Pus* found on outer surface of mastoid, squamous, frontal, and sup. maxilla. Pus generally distributed over left side of brain and first frontal fissure, first frontal convolution, fissure of Rolando, middle lobe on right side, both lateral ventricles, medulla and pons. Abscess on cerebellum. Ab*normal openings existed through inner mastoid plate*, through squamous, and between middle and internal ears and cranial cavity.
Pain in right side of head and ear; temp. and pulse medium; delirium; tender mastoid; mastoid opened; no pus found; squamous trephined; no pus found; skull trephined through mastoid and occipital bones; found pus	Death .	Abscess of cerebellum. Pus around medulla. Dura-mater inflamed and adherent. Pia-mater inflamed. Carious opening in *mastoid plate (inner)*. Carious opening between middle and internal ears and cranial cavity. Thrombi found in longitudinal sinus, Sylvian fissure, sup. petrosal sinus and right ventricle.
Pain in right side of head; temp. and pulse medium; delirium; mastoid swelled and inflamed; mastoid opened; found pus .	D'ath fr. ty'd fev.	Dura-mater congested and adherent. Pia-mater congested. Thrombi in longitudinal and lateral sinuses.
Pain in right side of head; temp. and pulse high; chills; delirium	Death .	Necrosis of tympanum and lateral sinus. Ossicles gone. Pus in sup. petrosal and lat. sinuses. Dura-mater and pia-mater inflamed. Thrombus in sup. petrosal sinus.
Temp. medium and sub-normal; pulse medium; pain in right ear, mastoid, and right side of head; mastoid swelled and tender; delirium; bowels loose; mastoid opened.	Death .	Diffuse subdural abscess. Most marked in anterior parietal region, anterior to fissure of Rolando. Collections *of pus on surface of* r. frontal convolution, and r. temporal convolution. Purulent thrombus in the sup. sinus and in sup. longitudinal sinus. Adhesions between arachnoid and pia-mater. Carious opening from mastoid cells into lateral sinus.
Diarrhœa; chills; delirious; aphasia; incoherence; swelling under mastoid in neck; temp. and pulse medium	Death .	Large vessels of dura and pia-mater filled with dark blood. Basilary artery and circle of Willis in same condition. Inferior surface of cerebellum purulent. Middle and internal ears purulent. Purulent thromus in l. petrosal sinus, both sup. and inf. Same condition in lateral sinus and internal jugular vein. Purulent phlebitis of external jugular vein. The vein from auditory canal in the same condition. Pus in semi-circular canals. Thrombus of basilar vein. Superficial posterior auricular glands much enlarged.
Temp. and pulse medium; temporal swelling *incised* and pus liberated; cheek *incised and* pus liberated; mastoid muscle *incised* and pus liberated; mastoid opened and pus liberated; delirium; right pupil contracted; stupor; unconsciousness; spasms of l. upper and lower extremities; l. facial paresis . .	Death .	Multiple pus sinuses in neck. Carious spots on outside of mastoid and occipital. Congestion of dura and pia-maters. R. sigmoid sinus, bulbous portion of jugular vein, and *mastoid* emissory vein, all obliterated. Tumor in *middle ear. Malleus and incus gone. Pus in* mastoid antrum. Carious canal leads from mastoid antrum into sigmoid fossa. Carious opening through incisura Santorini. Caries of pyramid. Caries of bony wall of transverse sinus.
Vertigo; *pain in head*; marked in occipital region; temp. and pulse sub-normal; polypus in r. ear; removed; l. ear; chronic otorrhœa; simple; coma	Death .	Hyperæmia of all meningeal veins. Carious opening in sup. petrosal *sinus over vestibule. Petrous* bone carious. Semi-circular canal, vestibule, and cochlea carious. Pus in middle cranial *fossa running into the* canal of the medulla. Abscess in left posterior cranial fossa. Cholesteatoma in l. mastoid antrum.
Chills; painful spot on top of head; meatus narrowed; headaches; temp. medium; mastoid opened; found pus; paresis of r. side of face; difficult speech; defective memory; aphasia; diagnosis; brain abscess; operation; fistula directly above meatus enlarged; pus found	Recov'y	
. . . .	Death .	Cerebral meningitis. Abscess of l. temporal lobe.
Earache; head painful; vomiting; paraplegic; *motor paralysis* of lower limbs; scalp and spine painful to touch	"	*Abscess beneath dura-mater* on anterior surface of petrous bone. Drum-head and ossicles gone. Pus in middle ear, mastoid *cells, and labyrinth. Pia*-mater congested. Vertebræ in portions of cervical and dorsal spine carious.
R. facial paralysis. *Painful mastoid*	"	Pus in middle ear and mastoid cells. Ossicles gone. Caries of tympanic walls. *Dura-mater* red, thickened and softened. Facial *nerve* and chorda tympani largely destroyed.
. . . .	"	Pus in middle ear, mastoid cells, vestibule and cochlea. Abscess in outer half of r. cerebral hemisphere.
Acute exacerbation; pain over *r. side of head*; meatus red; chills, fever, vomiting, headache; optic nerves congested; convulsions, unconsciousness, coma	"	Longitudinal sinus filled with blood. Abscess in temporal lobe. *Not encapsulated. Pus* in lateral sinus. Opening in anterior and outer wall of lateral sinus. Thrombus in *lateral sinus. Pus in tympanum* and mastoid cells. Malleus and incus carious.
Mastoiditis; convulsions	"	Abscess of cerebellum. Pus between dura-mater and tegmen-tympani.
Acute otitis	"	Pus over the region of the petrous bone, extending from the tympanic cavity through openings in tegmen-tympani.
Earache and headache; chills; temp. high; pain in temporal region and over r. eye	"	Abscess in anterior lobe of l. cerebellum. Caries of petrous bone. Clotted blood in lateral sinus. Carious opening in wall of lateral sinus, communicated with abscess.
. . . .	"	Congestion of dura-mater. Puro-lymph in pia-mater over l. sphenoidal lobe. *Abscess* in l. lobe of cerebellum. Temporal bone necrosed, especially in tympanum. Pus in middle ear. Drum-head gone.
Unconscious; maniacal; r. pupil contracted; mastoid swelled; Wilde's *incision*	"	Meningitis. *Abscess of l. lobe of* cerebellum. Almost entire destruction of anterior wall of ex. *meatus. Drum-head* gone. Caries of middle ear.
. . . .	"	Abscess communicating with middle ear in tempero-sphenoidal lobe.
Deafness; purulent discharge from ear; l. facial paralysis . . .	"	Caries in *tympanum. Abscess in* l. middle crus-cerebelli, extending partly into cerebellum and into pons, abutting on fourth ventricle and pressing on seventh nerve.
Acute exacerbation; mastoid abscess; opened; vomiting; semi-consciousness and facial paralysis; divergent strabismus; pupils contracted	"	Caries extending backward and upward from mastoid as far as parieto-occipital suture. Opening through parieto-occipital suture, leading into skull. *Lateral sinus empty and hard.* Meninges congested. Pus in posterior fossa between dura and skull. Caries at this point. Abscess of r. lobe of cerebellum.
Pain, especially in l. side of forehead; languid *and drowsy*; vomiting, aphasia, epilepsy	"	L. sphenoidal lobe adherent to bone. *Abscess in* l. sphenoidal lobe. Petrous carious in two places, one through roof of tympanum, the other in groove for lateral sinus. *The latter* communicated with mastoid cells.
. . . .	"	Abscess in r. lobe of cerebellum.
Pain and deafness; discharge; vomiting and dizziness; mastoid painful; fever.	"	*Pus at base of middle* lobe of cerebrum. Tympanum purulent, granular, and carious. Drum-head gone.
Headache, fainting, [illegible] ysis; paralysis of [illegible] meatus chiselled a[illegible] and fluctuating; pus between dura and pia	"	Purulent degeneration of dura, especially from longitudinal *sinus to base* of brain.
Headache, starting on l. side; feeling *of pressure*; *stupid*, aphasia; head drawn downward into neck; face red, pupils sluggish; constipation; *polypi in both* ears; removed; spasms; unconsciousness; flexion of all four extremities; *delirium*, stupor, *sensitive* skin, pain upon moving back	"	A yellowish projecting spot existed somewhat above surface of dura, over *the crista sup. of the petrous bone*, corresponding to site of injury. *Pia*, at convexity, covered with *pus*. Abscess in l. tempero-sphenoidal lobe. Pus in ventricle. An opening existed outward from the corpus *striatum* [illegible] scess. Purulent degeneration of temporal *lobe* and softened. Lateral ventricle as well as 3rd [illegible] Pia at base charged with pus, extending down into vertebral canal. Both mastoids filled with pus.
Pain; red mastoid; chills; unconsciousness; mastoid opened; pyæmia; herpes *on face*	Death .	Thrombi in l. lateral sinus and jugular vein.
Acute exacerbation, meningitis	"	Pus in tympanum. Opening through drum-head. Thrombo-phlebitis of transverse sinus. Abscess in subdural space and l. temporal lobe. Purulent lepto-meningitis of the base and convexity.

TABULAR REPORT OF PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROM-

No.	Where Reported.	Surgeon's Name, etc.	Sex.	Age.	Ear.	Previous History.
30	Arch. Otology, 1880	Frankel	M	22	R	Chronic otorrhœa
31	Arch. Otology, 1880	Frankel	F	28	R	" "
32	Arch. Otology, 1880	Frankel	M	53	L	" "
33	Arch. Otology, 1880	Frankel	F	3	L	Pebble in ex. meatus; attempt at removal
34	Am. Jour. Otology, 1879	Greene	.	.	.	Otitis media; polypus
35	Lancet, 1878	Gribbon	M	22	R	Chronic otorrhœa
36	Arch. fur Ohrenh., vol. 19	Burkner	M	36	R	" " pain in ear and head; deafness
37	Arch. fur Ohrenh., vol. 19	Burkner	M	20	L	Chronic bilateral otorrhœa
38	Arch. fur Ohrenh., vol. 19	Burkner	M	17	L	Acute purulent otorrhœa; l. facial paralysis
39	Am. Jour. Otology, 1881	Loring, N. Y. City	M	.	R	Influenza; deafness; closure of eustachian tubes; frequent similar attacks
40	Arch. der Heilk., vol. 2	Wendt	M	49	R	
41	Arch. der Heilk., vol. 2	Wendt	M	52	R	Acute catarrhal otitis
42	Arch. der Heilk., vol. 2	Wendt				
43		de Rossi, Rome	F	57	L	Malaria; tinnitus aurium; acute otorrhœa
44		de Rossi, Rome	F	18	R	Chronic otorrhœa
45	King's Col. Hos. Reports	Pritchard, London	M	23	L	Chronic otorrhœa; frontal headache: pain in ear
46	King's Col. Hos. Reports	Pritchard, London	M	26	L	Chronic otorrhœa, pain in ear, and swelling of l. side of neck
47	Arch. Otology, 1882	Munson, Albany	F	39	L	Chronic otorrhœa. Has had partial l. facial paralysis
48	Lancet, 1887	Gray	.	26	R	" " pain in and behind ear; facial paralysis
49	Trans. of Am. Otol. Society	Pomeroy	.	.	R	" "
50	Arch. of Otology, 1889	Finlayson & Barr	M	22	R	" "
51	British Med. Jour., 1886	Gowers & Barker	.	19	R	Chronic otorrhœa; pain in and around ear
52	Arch. Otology, vol. 12	Knapp, N. Y. City	M	39	R	Acute purulent otorrhœa
53	Arch. Otology, 1880	Steinbrugge	M	58	R	Chronic otorrhœa
54	Breslauer Aerztl. Zeits, 1879	Binswanger	M	51	R	Neither discharge from ears nor deafness has been observed

BOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

Present History.	Result.	Autopsy.
Appearance of cerebral symptoms after knock on head	Death .	Pus in tympanum. No perforation of drum-head. Incus gone. Caries of petrous bone through tegmen-tympani. Abscess in r. *temporal lobe.* Encapsulated. Thrombo-phlebitis of r. transverse sinus.
R. facial paralysis, vomiting, retained urine, dilated pupils, coma	“	Pus in tympanum. Perforation of drum-head. Caries of tegmen-tympani and ex. meatus. *Inspissated exudation compresses facial nerve* in Fallopian canal. Purulent basilar meningitis. Abscess in r. temporal lobe. Encapsulated. Mastoid sclerosed.
Polypus removed; headaches; mastoid opened; meningitis . .	“	*Epithelomia of l. middle ear, with destruction of most of temporal bone.* Purulent basilar meningitis.
Meningitis	“	Drum-head gone. Pebble in tympanum. Pus in tympanum. Purulent *meningitis of convexity.*
Vomiting, pain, convulsions	“	Caries of tegmen-tympani. Perforation of dura-mater near transverse sinus. Abscess of temporal lobe.
Headache, nausea, paresis of lower extremities	“	Abscess in r. lobe of cerebellum. Caries of petrous at internal aud. meatus. Pus in mastoid.
Pain in ear and head; deaf [illegible] ge; convulsions, delirium, coma [illegible] scle . . .	“	Necrosis in tympanum and ex. meatus. Dura near temporal bone injected, *thickened, and purulent.*
Pain in l. ear; cessation of [illegible] vertigo, high fever; thrombus felt in l. jugular; pain in neck; apathy; mastoid red and swelled; facial veins enlarged	“	Thrombi in transverse sinus and bulbous venæ jugularis. *Caries of jugular fossa.*
Granulations in tympanum; removed; later had pain in ear; cessation of discharge; return of bad symptoms; contraction of l. pupil; nystagmus of both eyes; somnolence; deafness; paresis of l. leg; paralysis of l. abducens; pain in all branches of trigeminus; vomiting	“	Pus around chiasm. Anterior extremity of l. lobe of *cerebellum is adherent* to posterior margin of temporal bone. Abscess in l. pons. At sup. border of temporal bone are three carious openings communicating with irregular cavity involving the entire posterior portion of temporal bone. This cavity is filled with a mass which infiltrates the posterior wall of temporal bone just above sigmoid sulcus, and is also connected with vestibule. Ossicles gone. *Int. ear destroyed by gelatinous mass.*
Pain in ear and side of head; acute catarrhal otitis; delirium; drum-head punctured; no pus	Death .	Congestion of dura at roof of tympanum. Sero-purulent exudation in sub-arachnoid space, extending from longitudinal fissure down side of brain. Pus in *upper surface of r.* lobe of cerebellum. Pseudo-membrane in tympanum.
Tinnitus aurium; pain, deafness, unconsciousness, convulsions	“	*Basilar meningitis.*
Pain; tinnitus aurium; found dead in bed.	“	Diffuse meningitis.
Traumatic inflammation of middle ear.	“	Basilar meningitis.
L. side of neck swelled; swelling *incised and pus evacuated;* pus comes from meatus on pressure of swelling; polypus in middle ear; middle ear connected by sinus with swelling; mastoid too sclerosed to open; chills	“	Coagulated blood in left sinuses. Localized meningitis. Clot in jugular *vein. Caries of atlas and 2d vertebra.* Pus in cavum tympanum. Occi*pital condyles carious.* Pus in mastoid cells. *Transverse sinus surrounded* by pus. Carious opening between mastoid antrum and sigmoid sinus.
Pain in ear and side of head; fever; deafness; tympanic granulations; removed; headache, exophthalmia, *ptosis; pain in* head; painful swelling over mastoid muscle; coma	“	Dura adheres to bone. Pus in subdural space. Pus *covers trigeminus* and acoustic nerves. Dura at base covered with pus. Pus in sup. petrosal sinus, *inferior cavernous sinus,* and transverse *sinus. Caries of* tegmen-tympani. Pus in tympanum. Thrombi in longitudinal sinus and communicating veins. Abscess in inferior posterior side of frontal lobe.
Caught cold; increased discharge and pain; attacks of unconsciousness, with loss of speech; convulsions; twitching of r. side of face; semi-conscious; fits, drowsy, *incoherent;* tenderness on pressure, most marked about two inches above meatus; slight facial paralysis; operation; skull trephined two inches above and one-half inch in front of meatus; trephined again one inch behind original opening; pus found *outside of dura;* trephined again over occipital parietal region. No pus; dura always left intact	Recov'y	
Pain in ear and side of head; chills, vomiting, *dizzy; aural* polypus; temperature medium; delirium; twitching of l. eyebrow and angle of mouth; retention *of urine;* semi-conscious; operation; trephined one and one-half inches behind meatus, and the *same* distance above the cerebral base line; pus evacuated; improvement; delirium, chills; *wound* re-explored; no pus; mastoid opened; no pus; paralysis of r. arm and leg; l. optic neuritis; track of original operation freely dilated: pus escaped	Recov'y	
Pain in ear, [illegible] -sided headache, [illegible] fused; delirium, unconsciousness, temp. and pulse high, coma, convergent strabismus l. eye, iris unresponsive	Death .	Polypus *of* ex. meatus. Semi-circular canals carious. Abscess of middle lobe of cerebrum, directly *above semi-circular canals.* Opening in meninges and brain tissue connecting the semi-circular canals and abscess.
Fever, apathetic, *half comatose,* paralysis and anæsthesia of l. leg, delirium; *mastoid opened;* no pus, *coma,* hemiplegia, hemi-anæsthesia	“	Carious opening through tegmen-tympani. Abscess between dura and petrous. R. cerebral hemisphere covered with pus. *Perforation of dura upon* posterior surface of petrous.
. . . .	“	Diffused abscess of r. lobe of cerebellum. Tympanum carious. Carious opening through tegmen-tympani.
Acute exacerbation, fever moderate, giddy, pain in jaw and behind ear, vomiting, *chills, pain in frontal* and occipital regions, pain in back, head retracted, r. facial paralysis, constipation, stupor, vomiting	“	Pia congested. Purulent exudation in frontal convolution of both sides. Pus at base in region of medulla. Brain adherent near r. internal auditory meatus. *Granulations in* tympanum and *mastoid* antrum. Malleus and incus gone. Facial nerve disorganized and denuded of its bony covering. Mastoid cells *obliterated and converted* into sclerosed mass. Pus in antrum. Caries of tympanum. Caries of cribriform lamina. *Carious* aperture on upper part of petrous communicates with cochlea. Bone over sup. semi-circular *canal is* carious.
Fever, bilateral optic neuritis, vomiting, unequal *pupils;* mas*toid* opened; improvement, but unequal pupils and optic neuritis persisted; stupor, insomnia, delirium, chills; operation; skull trephined 1¼ inches behind and 1¼ inches above center of meatus; aspiration needle [illegible] lobe inward, forward and downward	Recov'y	
Pain in ear and head, especially in [illegible] pain, *swelling* and fluctuation in l. o[illegible] at this point; pus liberated, bone de[illegible] improvement; later become worse; pus in occipital *region* came from interior of skull; frontal headaches, insomnia, nausea, pale, chills, fever, swelling *below original* opening incised; pus found [illegible] [illegible]itis both eyes; [illegible] original openin[illegible] [illegible]nial cavity; pa[illegible] [illegible]headache, nausea, vomiting, delirium, coma	*Death* .	The openings in the skull referred to in the history of the case were found. At outer *surface* of lateral sinus a *streak* of pus led along the transverse sulcus to large collection of pus at lowest part of sigmoid fossa. Pus in mastoid cells and tympanum. Abscess in middle and outer *part of little* brain. Not encapsulated.
Vertigo, pain in r. parietal region and ear, neuralgia in third *branch* of r. trigeminus [illegible] and middle ear, l. *arm* [illegible] vision, constipation, co[illegible]	Death .	Fluid blood in all sinuses. Pia *congested.* R. temp. lobe adherent to *petrous.* Abscess in r. temp. lobe. Encapsulated. Surrounding brain substance sclerosed. L. optic nerve atrophied. Perforation *through* anterior surface of r. petrous and dura. Carious opening in semi-circu*lar canals.* Drum-head and ossicles gone. Tympanum necrosed so that it and mastoid antrum are thrown into one cavity, all filled with *choles*teatoma.
Fever, loss of *appetite,* vomiting, paralysis of l. arm, epilepsy, chronic convulsions, r. pupil dilated	“	Abscess in r. first frontal convolution. Encapsulated. Roof of r. tympanum inflamed. Granulations in r. tympanum and mastoid cells. *Drum-*head destroyed. Ossicles *intact.*

TABULAR REPORT OF PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROM-

No.	Where Reported.	Surgeon's Name, etc.	Sex.	Age.	Ear.	Previous History.
55	Arch. fur Ohrenh., 1879, No's 11 and 12	Kretschy				
56	Arch. fur Ohrenh., 1879, No's 11 and 12	Kretschy				
57	Arch. fur Ohrenh., 1879, No's 11 and 12	Kretschy			L	
58		Burckhardt	F	19	L	Chronic otorrhœa
59		Burckhardt		2	L	
60		Burckhardt	F	7		
61		Burckhardt	F	2	L	
62	Arch. *Otology*, *1879*	Hartman	F	34	L	Chronic otorrhœa; occasional acute exacerbations
63	Arch. Otology, 1879	Hartman	M	30	L	Chronic otorrhœa; violent pain in l. half of face, which led t facial paralysis
64	Arch. Otology, 1879	Hartman	M	13	R	Chronic otorrhœa
65	Lancet, 1880	Field	M	18	R	" "
66	Arch. Otology, 1880	Pooley	M	45	L	Blow on l. side of head, followed by deafness and otorrhœa
67	Am. Jour. Otology, 1881	Rodman, Waterbury	M	21	R	Chronic otorrhœa; occasional acute exacerbations
68	Deutsche Med. Wochens., 1890	Hoffman				
69	Dublin Med. Jour., 1890	Patterson				
70	Arch. fur Ohrenh., 1879	Burckhardt-Merian	F	19	L	Chronic otorrhœa
71	Arch. fur Ohrenh.. 1879	Burckhardt-Merian			L	" "
72	Arch. fur Ohrenh., 1879	Burckhardt-Merian				
73	Arch. fur Ohrenh., 1879	Burckhardt-Merian				Chronic otorrhœa
74	Med. Times and Gazette, 1880	Johnson	M	14	R	" "
75	Med. Times and Gazette	Thompson	F	12	R	Tuberculous; chronic otorrhœe
76	Arch. Otology, 1888	Ferrer, San Francisco	M	60		
77	Arch. Otology, 1888	Lewis, Birmingham				
78	Arch. Otology, 1888	Lewis, Birmingham				
79	Arch. Otology, 1888	Barr, Glasgow	M	21	L	Chronic otorrhœa
80	Arch. Otology, 1888	Roosa, N. Y. City	F	42	L	Advanced Bright's disease
81	Brit. Med. Jour.. 1888	Braker	M	30	R	Chronic otorrhœa; lateral sclerosis of spinal cord
82	New York Med. Jour., 1887	Abbe				
83	Arch. fur Ohrenh., vol. 26	Schmiegelow, Copenhagen	M		R	Chronic catarrhal otitis
84	New York Med. Jour., 1886	Mathewson, Brooklyn	M	40	R	Chronic otorrhœa
85	New York Med. Jour., 1886	Mathewson, Brooklyn	F	11	L	" " tympanic polypus
86	New York Med, Jour., 1886	Mathewson, Brooklyn	M	5	R	
87	British Med. Jour., 1887	Greenfield	M	26	L	Deafness
88	Canada Lancet, 1881	Ryerson	Child		L	Scarlet fever
89	Arch. fur Ohrenh., vol. 26	Wagenhauser			L	
90	Arch. Otology, 1891	Friedenwald, Baltimore	M	17	L	Chronic otorrhœa; had abscess lanced behind ear years ago

BOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

Present History.	Result.	Autopsy.
	Death	Purulent thrombus in L. transverse sinus. Pus in jugular sinus, and defect in its anterior wall leads to necrosed petrous. Cholesteatoma in tympanum. Fibrous tissue about jugular vein infiltrated with serum and pus.
	"	Purulent infiltration of inner membranes of brain.
	"	Abscess in l. cerebellum.
Died of meningitic symptoms after illness of 16 days	"	L. trigeminus acousticous and facialis imbedded in pus. Purulent pia-mater. Thrombus in sup. sinus. Caries of petrosal sinus canal. Polypus in tympanum. Mastoid cells absent. Thrombas in lateral sinus.
Death from tubercular meningitis	"	Partial necrosis of l. wall of lateral sinus. Carious openings of bony walls of sulcus transversus.
	"	Ossicles gone. Caries of mastoid process. Caries of parietal bone.
	"	Multiple caries on skull. L. drum-head gone. Malleus and incus gone. Necrosis of mastoid process.
Painful mastoid, fever and chills, pain in l. temple, delirium	"	Anterior l. hemisphere covered with pus, extending to base of brain. Dura over l. tegmen-tympani discolored and pierced by openings, beneath which a cavity of pus was seen. Tegmen-tympani perforated by caries. Abscess in brain over tegmen-tympani, extending into lateral ventricle, which, with r. and middle ventricle, was filled with pus. Spinal cord bathed in pus. Polypus and necrosis in tympanum. Mastoid sclerosed.
Pain in entire head; polypus in l. tympanum	Death	Purulent meningitis at posterior cerebral fossa. Abscess in l. cerebellum. Caries of bony wall of facial canal. Caries of semi-circular canal. Mastoid sclerosed.
Meningitis; swollen mastoid; Wilde's incision; pus liberated; delirium, coma	"	Pus patches over brain surface. Pus at base of brain, especially at r. of cerebellum. Abscess in middle cranial fossa. Pus at sella turcica and and l. middle cranial fossa. Necrosis of tegmen-tympani. Tympanum carious. Mastoid sclerosed.
Pain in head	"	Suppurative meningitis over r. petrous bone. Inner mastoid at lateral sinus carious. Thrombus in lateral sinus. Abscess of r. tempero-sphenoidal lobe and occipital lobe. Abscess in r. cerebellum. Incus and stapes gone.
Painful ear; tinnitus aurium; drum-head perforated; mastoid swollen, red and painful; mastoid opened; pus found; not much fever	"	Abscess in l. middle lobe. L. sided pachymeningitis. Petrous carious, especially at outer half of middle surface. Pus in lateral ventricle of r. side of brain.
Mastoid symptoms; mastoid opened; pus found		Meningitis. Pus in neck between mastoid and styloid process. Caries in inner plate of mastoid at sulcus of lateral sinus. Caries of squamous. Lower surface of mastoid has 3 carious perforations in the groove next the tip of mastoid in the digastric fossa, all communicating with the carious mastoid cells. Mastoid antrum carious.
He discovered in the course of an operation for mastoid abscess, an abscess in the occipital lobe, which he opened	Recov'y	
Pyæmia, following a suppurating ear	Death	Thrombus in lateral sinus.
Meningitis	"	L. circumscribed basilar meningitis. Fistula between mastoid antrum and sup. petrosal sinus. Polypus in tympanum. No mastoid cells.
	"	Caries of tympanum, antrum, mastoid cells, and osseous walls of lateral sinus. Thrombosis of lateral sinus. Tubercular meningitis.
	"	Caries of tympanum and antrum. Carious opening through outer wall of mastoid. Caries of parietal bone. Meningitis.
	"	Necrosis of antrum and squamous. Meningitis
Chills, headache, thoracic pains, unsteady gait, constipation, night sweats, pupils dilated, delirium, coma, temp. and pulse not high	"	Double pleurisy. Pus in lungs, r. internal jugular vein, and tympanum. Abscess at apex of petrous bone. Necrosis of petrous near labyrinth. Blood coagulum in sigmoid sinus.
Headache, vertigo, vomiting, dilated pupils, temp. and pulse medium, chills, involuntary defecation, cough, thoracic pains, coma, convulsions	"	Congestion of pia-mater. R. cerebellum adherent to dura. Abscess in r. cerebellum. Tubercular deposits in brain. Thrombus in r. internal jugular vein, sub-clavian vein, vena-cava, and r. auricle. Pus in r. half of posterior occipital fossa, r. sigmoid sinus, tympanum, vestibule, and semi-circular canals. Lungs abscessed.
Mastoid abscess; opened mastoid; found pus; death from hematemesis	"	Pus and granulations in mastoid cells and tympanum. Meningitis.
Mastoid abscess	"	Abscess in temporo-sphenoidal lobe.
Mastoid abscess	"	Phlebitis of lateral sinus.
Headache, slow and intermittent pulse, normal or sub-normal temp., contraction of l. pupil, paresis of all ocular muscles except external rectus, partial r. facial paralysis, paresis of r. arm with wrist-drop; mastoid opened; no pus; skull trephined above ex. meatus; brain pierced with trocar; pus found	Recov'y	
Acute otitis; drum-head lanced; pain and tenderness at junction of temporal and occipital bones; temp. medium	Death	Caries of tympanum. Pus in middle ear. 7th nerve exposed and imbedded in pus. No mastoid disease. Meningitis.
Acute exacerbation, pain in r. half of head, vomiting, epilepsy, contraction of r. pupil; mastoid opened; no pus, emaciation, incontinence of urine, stupor, somnolence; operation; parietal bone trephined; dura incised; no pus; trephined again, 1½ inches above and 1¼ inches behind the ex. meatus; needle passed 1½ inches deep, forward and inward; pus found	Recov'y	
Acute otitis media; acute meningitis; choked disc on same side	Death	Purulent meningitis at base of cerebrum and lower surface of cerebellum. No evidence that pus had extended from ear. Internal auditory canal showed streaks of pus following the course of nerve.
Neuralgia of all three branches of r. trigeminous, followed by r. facial paralysis; r. choked disc; later, purulent otitis, pain, mastoid inflamed; mastoid opened; pus found; œdema of r. side of face; skull trephined at posterior cranial fossa; no pus; mastoid opening enlarged backward; improvement, nausea, fever, headache, vomiting, unconsciousness	"	Diffuse purulent lepto-meningitis. Abscess in temp. lobe.
Pain over mastoid; Wilde's incision; brain complications	"	Caries of tegmen-tympani. Abscess of brain over tympanum.
Spontaneous opening in ex. mastoid plate; facial paralysis; improvement; became worse; pain, vomiting, drowsiness, constipation, optic neuritis, convulsions	"	Dura-mater adherent to petrous. Pus in cerebellum.
Acute otitis media; drum-head not perforated	"	Caries of tegmen-tympani. Basilar meningitis.
Headache, vomiting, ptosis, optic neuritis, sub-normal temp., semi-comatose; operation; skull trephined; dura incised; pus found	Recov'y	
Acute purulent otorrhœa; mastoid pain, swelling and tenderness; pain in head; ptosis r. eye; divergent squint right eye; both pupils dilated; coma; mastoid opened; pus found; improvement; later became worse; vision poor; optic discs swollen; fever, delirium	Death	Dura adherent to skull. Pus on surface of both sup. lobes. Purulent thrombi in lateral sinus.
Acute otorrhœa; mastoid operation	"	Purulent meningitis. Inner plate of mastoid carious and perforated. Inner surface of petrous covered with granulations.
Pain, dizziness, aural polypi, left-sided deafness, chills, headache, temp. and pulse medium, tenderness behind ear; later, chills and high fever; operation after Von Bergmann, viz.: from a point 4 c.m. behind ex. meatus in a line made with the lower margin of the orbit, ascend perpendicularly for 5 c.m. to reach point for trephening; no pus; mastoid opened; pus and cholesteatoma found	"	Pus in pia, covering surface of l. frontal and parietal lobes. Perforation of inner mastoid plate. Purulent thrombus in lateral sinus.

TABULAR REPORT OF PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROM-

No.	Where Reported.	Surgeon's Name, etc.	Sex.	Age.	Ear.	Previous History.
91	Arch. Otology, 1879	Pierce	F	34	L	Chronic otorrhœa
92	Trans. Am. Otolo. Society	Sexton, N. Y. City	.	.	.	
93	Am. Otolo. Society, 1887	Roosa, N. Y. City	M	11	R	
94	Med. Times, 1885	Parker	.	.	R	
95	Arch. Otology, 1884	Sutphen	M	44	B	Chronic otorrhœa
96	Arch. Otology, 1884	Sutphen	M	21	R	“ “
97	Arch. Otology, 1881	Moss, Heidelberg	M	23	L	“ “ polypus; paralysis l. facial nerve; deafness l. ear
98	Arch. Otology, 1884	Hedinger	M	.	L	
99	Arch. Otology, 1884	Hedinger	F	.	L	
100	Arch. Otology, 1885	Rothholz	M	20	R	Chronic otorrhœa
101	Arch. Otology, 1886	Sutphen	M	25	R	Chronic otorrhœa; from blow on ear; four years before had abscess behind ear, which was opened and healed; swelling recently recurred, with pain
102	Arch. Otology, 1880	Pooley	M	30	R	Chronic otorrhœa
103	Arch. Otology, 1887	Barr & McEwen, Glasgow	M	9	R	“ “
104	Arch. Otology, 1889	McEwen, Glasgow	M	17	L	Chronic otorrhœa
105	British Med. Jour., 1879	Barr, Glasgow	M	17	L	“ “
106	Glasgow Med. Jour., 1880	Barr, Glasgow	M	14	L	“ “
107	Glasgow Med. Jour., 1880	Barr, Glasgow	“	17	L	“ “
108	Glasgow Med. Jour., 1880	Barr, Glasgow	“	12	L	“ “
109		Remmel	.	.	R	“ “
110		Taylor	.	.	.	“ “
111		Moss, Heidelberg	.	.	R	
112		Moss, Heidelberg	.	.	R	Chronic otorrhœa
113		Moss, Heidelberg	.	.	R	“ “
114		Moss, Heidelberg	.	.		“ “
115		Burckhardt-Merian	.	1	L	“ “
116	Am. Otolo. Society	Kipp	F	28	L	
117	Med. Corr. Blatt. von Wurttemburg, 1889	Koebel, Stuttgart	.	.	.	Chronic otorrhœa

BOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

Present History.	Result.	Autopsy.
Hard swelling in front of ear necrosis; pain in l. cheek sis; pain in vertex and occipital region; carious bone discharged from ear; meatus very carious; later, the entire area of disease had fallen in, comprising the ex. meatus up to the level of the drum-head, exposing the tempero-maxillary articulation; condyle of the ramus of the jaw now exposed. The area of disease was now almost large enough to admit the closed fist; hernia cerebri appeared; paralysis of r. side with aphasia; constipation	" .	Destruction of bony and other tissues terrific; even aqueductus fallopii, semi-circular canal and carotid canal were exposed. Hernia of tempero-sphenoidal lobe.
Purulent otorrhœa; caries of attic, antrum and tympanum; lymphadenoma; facial paralysis	Death .	Inner wall of attic gone. Semi-circular canals exposed. *Caries of antrum* and mastoid cells. Purulent meningitis.
Painful swelling over ear; abscess opened; no fistula	"	Abscess of tempero-sphenoidal lobe. Encapsulated. Drum-head perforated. Upper meatus necrotic. Necrosis at juncture of mastoid and squamous. Caseous pus in meatus and *mastoid cells*.
Abscess above ear; opened; convulsions, coma.	"	Necrosis of floor of middle temporal fossa, corresponding to position of middle ear. Adhesion between brain and dura. Perforation of dura. Abscess in temp. lobe. Mastoid cells filled with cheesy debris.
Acute exacerbation, pupils contracted, aphasia, 7th nerve on l. side paralyzed, choked discs both eyes, necrosis l. ex. meatus, paralysis r. arm and leg; opening made into cranial cavity by way of meatus and mastoid; no pus found	"	Abscess in anterior and *middle lobes of l. hemisphere. Encapsulated.* Necrosis of petrous.
Acute exacerbation, par. vision of both eyes, both discs obe can be passed into cranial no pus.	"	Thrombi in r. *lateral and sup. longitudinal* sinuses. Caries in sulcus for lateral sinus. *Necrosis of sup. wall of petrous. Caries of meatus, tympanum*, and walls of mastoid.
Vertigo, coma	"	Abscess in l. cerebellum. Encapsulated.
Acute purulent otorrhœa, fever, fluctuating swelling of l. parotid gland; opened; found pus; pus may be forced from swelling into ex. meatus; coma	"	Pus under dura and arachnoid, and in antrum and tympanum. Purulent thrombus in sup. petrosal sinus. Ulcer in this sinus communicating with pyramid. Carious opening connects cranial cavity and tympanum, and mastoid antrum. Ulcer in transverse sinus. Ex. meatus carious.
Acute purulent otorrhœa, fever, polypus; removed; granulations; swelling of glands below ear, and frequent attacks of pain in entire l. half of head; vertigo; death from tuberculosis	"	Ex. meatus carious. Between bulbous venæ jugularis and bony portions of Eustachian tube there were two fistulas leading into pyramid. Tympanum carious and purulent. Internal wall of carotid canal carious. Thrombus in carotid artery. Cheesy pus in mastoid antrum.
Pain in vertex, deaf, drum-head gone, polypus, partial paralysis of auditory nerve, temp. and pulse nearly normal, constipation, stupor, delirium, unconsciousness, divergent strabismus, herpes on r. cheek	"	Dura congested. Purulent lepto-meningitis, especially at base. Communicating abscess in r. cerebellum. Encapsulated. Drum-head gone. Pus and polypus in tympanum. Ossicles gone. Chorda-tympani destroyed. Pus in Fallopian canal. Facial nerve exposed in tympanum. Facial nerve looks normal in tympanum, but from gangliform swelling to internal auditory meatus it is inflamed. Acoustic nerve presents the same general appearances. Pus in vestibule and cochlea. Petrous bone saturated with pus.
Meatus swelled; granulations and necrosis in tympanum; abscess opened; communication with tympanum established; improvement; later became worse; a fistulous opening existed just below ex. meatus, through which pus escaped; carious bone in this fistula; water injected into meatus escaped into mouth and fistula; vomiting, headache, aural hæmorrhage, fever, pain, delirium	Death .	The bone in region of middle ear has been changed into one large carious cavity. Opening into internal carotid artery. Cerebellum abscess communicating with carious cavity.
Pain in r. ear and r. side of head; mastoid swollen and tender; deaf; Wilde's incision; carious bone found; trephining refused; chills, delirium; mastoid opened; pus found; coma	Death .	Meningitis at convexity and base. Red inflammatory softening at apex of temporal bone. Upper surface of cerebellum inflamed. Pus in pia-*mater, arachnoid, tympanum, mastoid antrum and cells*, vestibule, semi-circular canals, Eustachian tube, and canal for tensor-tympani. Necrosis in tympanum. Incus and stapes gone.
Acute exacerbation; mastoid abscess; opened; found pus; no *improvement; fever slight; ptosis of r. eye; paresis of l. internal* rectus and l. orbicularis; veins r. side of head congested; r. mastoid muscle rigid; pain on pressure of vein passing through posterior condyloid foramen; dense stupor; pulse slow and feeble; constipation; operation; skull trephined 1½ inches above and ½ inch behind the center of ex. meatus; dura opened; dura and pia congested; aspiration needle passed toward eminence of petrous bone; pus found ¾ inch deep; at same time skull again trephined just above osseous boundary of ex. meatus, involving squamo-petrosal suture; abscess reached	Recov'y	
Unconscious, weak and slow pulse, optic neuritis, nearly mori-	Recov'y	
Vomiting, pain in head, stupor, *tremors, convulsions*	Death .	*L. tempero-sphenoidal lobe adherent* to bone beneath. Abscess in tempero-sphenoidal lobe. Encapsulated. Two carious openings in temporal bone; one through tegmen-tympani, the other in groove for lateral sinus, communicating with mastoid cells.
Vomiting, pain, coma, spasmodic contraction of flexors of arms and legs	"	Abscess in temporal lobe. *Polypus in tympanum.* Drum-head and stapes gone.
Aphasia, constipation, unconsciousness, paresis of r. side, coma	"	Abscess in l. temporal lobe. Carious fistulæ in roof of antrum, sigmoid flexure, and posterior wall of exterior meatus. All fistulæ communicate with mastoid cells.
Pain in mastoid and occiput, chills, vomiting, constipation . .	"	Pus beneath dura on posterior surface of l. petrous bone. The walls of the l. lateral sinus were thickened and detached from the bone by underlying pus. Mastoid cells filled with cheesy pus.
Temp. and pulse medium, pain in head and neck, œdema and tenderness over *mastoid, r. facial paralysis*, œdema of r. upper eyelid, delirium, anæsthesia r. half of face, diarrhœa	"	Caries of tympanum. Phlebitis of jugular vein. Thrombus in r. lateral sinus, extending in through inferior petrosal sinus to r. cavernous sinus, thence through circular sinus to l. cavernous sinus, which was filled with disorganized clots and pus.
Delirium, strabismus, diplopia, sudden rise and fall of temp., retinal veins large and tortuous	"	Thrombosis of lateral sinus and jugular vein. Lung abscess.
Acute otitis, pain in r. forehead and temple, chills, constipation, somnolence, impaired vision, delirium, sudden rise and fall of temp	"	Thrombosis r. lateral sinus and internal jugular vein. Phlebitis of emissary mastoid vein.
Pain in r. side of head	"	Thrombosis of *sigmoid flexure* and r. lateral sinus. Lepto-meningitis.
Chills, pain in occipit, vomiting	"	Phlebitis and thrombosis of lateral sinus. Meningitis. Cholesteatoma in mastoid cells.
Pain in ear, forehead and occiput, fever, œdema of temple, headache, stupor, spasms of upper extremities	"	Phlebitis and thrombosis of lateral and sup. petrosal sinuses. Circumscribed basilar meningitis.
External opening made over mastoid, vomiting, delirium, nose-bleed	"	Tubercular meningitis. *Thrombosis of l. lateral* ainus.
Furuncle l. meatus, pain in head	"	Inflammation of arachnoid and pia-mater. Abscess anterior portion of cerebellum. L. auditory and facial nerves *imbedded* in pus. Pus in mastoid cells. Slight tympanic inflammation.
Pain, facial paralysis; mastoid opened; caries of cells, antrum and tympanum; pyæmia	"	Carious openings into middle cerebral fossa and into transverse sinus. Phlebitis and thrombus of transverse sinus.

TABULAR REPORT OF PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROM-

No.	Where Reported.	Surgeon's Name, etc.	Sex.	Age.	Ear.	Previous History.
118	Medical Record, 1877	Roosa, N. Y.	M	41	R	
119	Am. Otolo. Society, 1871	Greene	“	25	.	Chronic otorrhœa
120	Roosa on the Ear, p. 532	Roosa, N. Y. City	.	.	L	“ “ mastoid abscess when young
121	Roosa on the Ear, p. 532	Roosa, N. Y. City	.	.	R	
122	Treat. on Ear, by Roosa	Cooper	M	65	“	
123	Am. Otolo. Society	Roosa, N. Y. City	“	25	“	Chronic otorrhœa
124	Treat. on Ear, by Roosa	Rep. *by Gull & Sutton*	“	66	“	“ “ deafness on one side
125	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	30	.	“ “
126	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	22	.	“ “
127	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	F	41	R	“ “
128	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	M	23	“	“ “
129	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	25	“	“ “
130	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	F	23	“	“ “
131	Treat. on Ear	Rep. by Gull & Sutton	“	20	“	“ “
132	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	M	13	R	“ “
133	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	28	L	“ “
134	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	27	.	“ “
135	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	8	L	“ “
136	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	F	26	R	“ “
137	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	51	L	“ “
138	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	23	“	Epilepsy
139	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	M	54	R	“
140	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	F	7	L	Chronic otorrhœa; great debility
141	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	M	.	R	“ “
142	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	F	26	“	“ “
143	*Treat. on Ear, by Roosa*	Rep. by Gull & Sutton	“	9	L	“ “
144	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	M	32	.	“ “
145	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	35	R	“ “ caries of mastoid; polypus in ex. meatus
146	Treat. on Ear, by Roosa	Rep. by Gull & Sutton	“	13	“	“ “
147	Treat. on Ear, by Roosa	Greene	“	28	“	“ “ paralysis of muscles of face after walk in rai
148	Treat. on Ear, by Roosa	Greene	“	22	“	Acute purulent otorrhœa
149	Treat. on Ear, by Roosa	Farwick	F	36	L	Chronic otorrhœa
150	Treat. on Ear, by Roosa	Schwartze	“	18	“	“ “ pain in ear
151	Treat. on Ear, by Roosa	Schwartze	M	3	“	“ “
152	Treat. on Ear, by Roosa	Schwartze	F	51	R	“ “
153	Treat. on Ear, by Roosa	Von Troltsch	M	53	L	“ “ polypus
154	Treat. on Ear, by Roosa	Von Troltsch	“	24	“	“ “
155	Treat. on Ear, by Roosa	Von Troltsch	F	21	R	“ “
156	Treat. on Ear, by Roosa		“	20	L	“ “
157	Treat. on Ear, by Roosa	Cock	M	35	.	“ “
158	Treat. on Ear, by Roosa	Cock	.	20	.	“ “
159	Treat. on Ear, by Roosa	Schwartze	F	4	R	“ “
160	Treat. on Ear, by Roosa	Schwartze	“	34	“	“ “
161	Treat. on Ear, by Roosa	Schwartze	.	1	L	“ “
162	Ophthalmic Record, March, 1892	J. Morrison Ray, Louisville, Ky	F	47	R	Acute purulent otorrhœa
163	Politzer on the Ear, page 538	R. Chimani	M	30	“	Chronic otorrhœa
164	Politzer on the Ear, page 539	Burckhardt-Merian, Basle	F	25	L	Chronic otorrhœa
165		J. Orne Greene	“	.	R	Chronic otorrhœa
166	Edinburgh Med. Jour., Nov., 1879	Kirk Duncanson	M	37	L	Acute otorrhœa
167	Arch. Otol., April, 1892	C. Truckenbrod, Hamburg	“	54	“	Deafness and tinnitus for ten days

BOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

Present History.	Result.	Autopsy.
Acute purulent otorrhœa; meningitic symptoms, chills, temp medium, pulse low; Wilde's incision; delirium, pyæmia	Death	Fibrino-purulent exudation in pia. Congula in sinuses. Lateral ventricle dilated and filled with blood-stained serum. Tegmen-tympani carious. Lateral sinus carious.
Deaf, dizziness, headache, diplopia, partial paralysis, coma	“	Abscess in tempero-sphenoidal lobe. Necrosis tegmen-tympani. Sinus connecting auditory canal and cerebral cavity.
Pain, high fever	“	Pus under dura and in mastoid cells. Temporal bone infiltrated with pus. Drum-head, malleus, incus, and part of stapes gone.
Acute purulent otorrhœa, pain in r. side of head, delirium, retention of urine, temp. and pulse medium	“	R. optic nerve atrophied. Meninges at base of cerebellum and upper part of spinal cord, covered with lymph and sero-pus. Malleus and incus gone.
Acute purulent otorrhœa, pain behind ear and in head, stupor.	“	Dura congested. Lymph at base. Pus at base, extending to medulla.
Pain in head and ear, temp. and pulse medium, chills, pleurisy, pneumonia, pain over lateral sinus, exophthalmus	“	Thrombus of r. internal jugular. Pus in r. lateral sinus. Drum-head and ossicles gone. R. lateral sinus carious.
Paralysis of one side, ptosis, giddy, chills, drowsy, delirium, face flushed, head hot, convulsions	“	Abscess in center of r. cerebral hemisphere.
Head and neck rigidly curved forward, and spine curved; rotary movements of head; unable to swallow	“	Abscess in pons varolii.
Sore throat for one week, and became generally ill; chills, semi-coma	“	Abscess in middle lobe.
Paralysis of r. half of face; pain in r. side of head, drowsy, semi-coma	“	Abscess in middle half of r. lobe of cerebellum, communicating directly with diseased temporal bone.
Caries of temporal bone, chills, pain in head, vomiting	“	Abscess in r. lobe of cerebellum.
Frontal headache, vertigo, delirium, paresis of l. side, coma	“	Abscess in r. middle lobe of cerebrum.
Pain in r. side of head and r. ear, vomiting	“	Suppuration and sloughing of r. middle lobe of hemisphere.
Paralysis of r. 7th nerve, pain in head, pain on moving neck, chills, nausea, vomiting, sweating	“	Abscess in cerebellum.
Syncope, convulsions with insensibility, pain in head, nausea, delirium, convulsions, pain and cramp in l. leg, coma	“	Abscess of the posterior lobe of r. hemisphere.
Delirium, coma	“	Abscess in anterior and middle lobe of l. hemisphere, communicating with carious petrous.
Pain in head, paralysis of r. side of face; death from hæmorrhage from lateral sinus	“	Dura inflamed, Sloughing of brain tissues. Lateral sinus inflamed and sloughy.
s of l. upper eyelid, limbs weak, -coma, convulsions	“	Abscess in l. cerebral hemisphere.
	“	Abscess in under surface of middle cerebral lobe.
Cough, pain in limbs, pulse quick, convulsions, coma	“	Abscess in l. cerebral hemisphere.
Convulsions, pain in head, fever, agony, convulsions	“	Abscess. Congulum of fibrin and blood in l. lateral sinus.
Pain in forehead, stupor, lost consciousness and sensibility, convulsions	“	Abscess in middle lobe of r. hemisphere.
Debility, epilepsy	“	Abscess in under part of l. lobe of cerebellum.
Cessation of discharge, chills and collapse, pain in r. side, stupid, coma	“	Abscess in r. middle lobe.
Pain in ear, headache, dizzy, coma.	“	Abscess in upper part of r. cerebral hemisphere.
Fever, vomiting, pain in ear, l. sided paralysis, coma	“	Abscess in middle lobe of l. side of cerebrum.
Chills, fever, abscess behind ear, stupor, convulsions	“	Abscess in middle cerebral lobe. Pus between diseased mastoid and dura-mater.
Pain in back of head, neck and shoulders of r. side, stupor, coma	“	Abscess in r. lobe of cerebellum.
Fever, headache, thick speech, hemiplegia, vomiting, drowsy, pain, stupor	“	Three abscesses in r. lobe of cerebellum.
Pain in r. side of head, vertigo, chills, nausea, vomiting, coma.	“	Abscess in r. half of cerebellum. Roof of tympanum bare, but not carious.
Pain in ear, headache, difficulty in swallowing, vertigo, paralysis of r. hypoglossal nerve	“	Meningitis. Caries of inner table of skull. Cochlea and semi-circular canals filled with solid red mass.
Pain in ear and l side of head, vertigo, delirium	“	Abscess in l. cerebral hemisphere. Caries of roof of tympanum.
Chills, left side of neck œdematous and painful on pressure, especially over jugular; painful swallowing, nausea, uvula œdematous, vomiting, singultus, convulsion of l. arm	“	Clots in sup. longitudinal and sup. petrosal sinus. Old thrombus in l. lateral sinus.
Meningitis	“	Œdema of pia-mater. L. lateral sinus contained a thrombus. Carious bone in l. auditory canal.
Pain in ear and head, vomiting, vertigo, coma, ptosis of r. eye	“	Hyperæmia of membranes of brain. Œdema of pia-mater. Thrombus in r. sup. petrosal sinus.
Pain in ear and head, coma	“	Abscess in l. middle cerebral lobe, connecting with petrous bone.
Brain symptoms	“	Carious perforation of roof of tympanum. Abscess of l. inferior cerebral lobe.
Chills, œdema near ear, swelling of sub-maxillary glands, delirium, r. pupil dilated, coma	“	Thrombus in r. lateral sinus. Caries of roof of tympanum.
Headache, vomiting, pain in ear and occipit, coma, delirium	“	Abscess in l. cerebellum and in l. inferior cerebral lobe.
Pain in ear	“	Sinuses congested. R. lateral sinus filled with a clot.
	“	Caries Lateral sinus filled with pus. Gangrene of brain.
Mastoid fistula, paralysis of facial nerve, brain symptoms	“	Abscess in r. middle lobe of cerebrum. Caries.
Chills, vomiting, pain in r. side of head, facial and pharyngeal paralysis	“	Abscess in r. middle lobe of cerebrum. Tegmen-tym- d soft. Caries of mastoid cells.
Mastoid fistula, vomiting, inanition, pneumonia, convulsions	“	Exostosis of petrous bone. Caries of tympanum and mastoid. Connective tissue growths in vestibule.
Temp. and pulse medium, pain in r. side of head, delirium, divergent squint, dilated pupils, coma	“	Purulent meningitis of frontal lobes. Pia opaque. Sulci filled with pus. Pus in tympanum.
Pain in mastoid and occipit, vertigo, high fever, later tumor formed over mastoid, extending to center of parietal and occipital bones; incision; pus foun ened; later, boring pains and h ough- r. exophthalmus; later, pneumo ision- deli, rium, unconsciousness, collapse	“	Caries of r. petrous. Rupture of sigmoid sinus. Thrombus of r. transverse sinus, both carotid sinuses, circular sinus of Ridley, l. cavernous sinus, sup. petrosal sinus, and r. ophthalmic vein. Purulent degeneration of thrombi, and inflammation of walls of above named sinuses. Purulent infiltration of connective tissue of r. orbit. Chronic œdema of pia-mater and arachnoid. Numerous pneumonic and gangrenous centres in both lungs.
Pain in l. side head and mastoid, Wilde's incision, no pus; later, coll ye-lid, exophthalmus, pupil sluggish; pus; later, swelling of r. eye-lid and r. eye-lid incised, found pus	“	Cholesteatoma of tympanum, mastoid cells, transverse sinus, and incisura mastoid of l. transverse sinus and jugular veins. Basilar coagulum in inferior petrosal sinus and caverno ophthalmic veins on both sides.
Pain in ear, vomiting, dizziness, chills, meatus swollen, pain and œdema over mastoid, and especially over mastoid foramen and adjacent occipital bone, temp. and pulse elevated; operation; mastoid opened, no pus, improved; later, pain and swelling over mastoid muscle	“	Purulent swelling over clavicle. Purulent mastoid periostitis. Sulcus of lateral sinus carious. Carious opening in tegmen-tympani. Thrombus in lateral sinus. Pus under dura-mater at sinus.
Swelling and redness over mastoid; pus came from an opening one-quarter of an inch in front of the membrana tympanum; pressure over mastoid caused the *pus to flow* more freely; operation refused	“	Pus in arachnoid space all over brain. Dura healthy. Upper anterior surface of *petrous carious*.
Diagnosis: Exudation in tympanum; made a paracentesis; removed serum later; a furuncle developed in the meatus; tympanic discharge became purulent; later, caught cold; pain in ear and head; temp. 104°; enlarged opening in drum-head; later, opening again enlarged; continued pain in head; vertigo, paresis of r. facial; aphasia; temp. medium; paresis of r. arm; operation; mastoid opened; no pus, no necrosis; roof of mastoid cavity opened, dura exposed; no pus; dura opened and brain exposed; no pus; exploratory puncture made, forward and upward, and pus evacuated; orifice enlarged by knife, and drainage tube inserted; cavity antiseptically irrigated; iodoform gauze used	Recov'y	

TABULAR REPORT OF PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROM-

No.	Where Reported.	Surgeon's Name, etc.	Sex.	Age.	Ear.	Previous History.
168	*Arch. Otol., April, 1892*	*C. Truckenbrod, Hamburg* .	M	29	L	. . . .
169	*Arch. Otol., April, 1892*	*C. Truckenbrod, Hamburg* .	M	25	L	. . . .

Case 154.—Extract from Treatise on the Ear, by Roosa. Treated by Von Tröltsch. Male, age twenty-four. Left ear. Chronic otorrhœa; brain symptoms. Death.

Autopsy.—Carious perforation of roof of the tympanum. Abscess of the left inferior cerebral lobe.

Case 155.—Extract from Treatise on the Ear, by Roosa. Treated by Von Troltsch. Female, age twenty-one. Right ear. Chronic otorrhœa; chills; œdema in the vicinity of the ear; swelling of submaxillary glands; delirium; dilatation of right pupil; coma. Death.

Autopsy.—Thrombus in right lateral sinus. Caries of roof of tympanum.

Case 156.—Extract from Treatise on the Ear, by Roosa. Surgeon's name omitted. Female, age twenty. Left ear. Chronic otorrhœa; headaches; vomiting; pain in ear and occiput; coma; delirium. Death.

Autopsy.—Abscess in left cerebellum and in left inferior cerebral lobe.

Case 157.—Extract from Treatise on the Ear, by Roosa. Treated by Cock. Male, age thirty-five. Chronic otorrhœa; pain in ear. Death.

Autopsy.—Sinuses congested. Right lateral sinus filled with a clot.

Case 158.—Extract from Treatise on the Ear, by Roosa. Treated by Cock. Sex not given. Age twenty. Chronic otorrhœa; symptoms not given.

Autopsy.—Caries. Phlebitis. Lateral sinus filled with pus. Gangrene of the brain.

Case 159.—Extract from Treatise on the Ear, by Roosa. Treated by Schwartze. Female, age four. Right ear. Chronic otorrhœa; fistula of mastoid; paralysis of facial nerve; brain symptoms. Death.

Autopsy.—Meningitis basilaris. Abscess in right middle lobe of cerebrum. Caries.

Case 160.—Extract from Treatise on the Ear, by Roosa. Treated by Schwartze. Female, age thirty-four. Right ear. Purulent otorrhœa; chills; vomiting; pain in right side of head; facial and pharyngeal paralysis. Death.

Autopsy.—Fistula of mastoid. Abscess in right middle lobe of cerebrum. Tegmen-tympani discolored and soft. Caries of mastoid cells.

Case 161.—Extract from Treatise on the Ear, by Roosa. Treated by Schwartze. Sex not given, age eight months. Left ear. Purulent otorrhœa; fistula of mastoid; vomiting; inanition; pneumonia; convulsions. Death.

Autopsy.—Exostosis of petrous bone. Caries of tympanum and mastoid. Connective tissue growths in vestibule.

Case 162.—*Ophthalmic Record*, March, 1892. Treated by J. Morrison Ray, of Louisville, Ky. Female, age 47. Right ear. Acute purulent otorrhœa; temperature and pulse medium; pain in right side of head; delirium; ptosis; divergent squint; dilated pupils; coma. Death.

Autopsy.—Purulent meningitis of frontal lobe. Pia opaque. Sulci filled with pus. Pus in tympanum.

Case 163.—Politzer on the Ear, page 538. Treated by R. Chimani. Male, age 30. Right ear. Chronic otorrhœa; pain in mastoid and occiput; vertigo; high fever. Later, tumor formed over mastoid, extending to center of parietal and occipital bones; incision; pus found; underlying bones roughened. Later, boring pains and heat flashes; disturbed vision; right exophthalmus. Later, pneumonia; jaundice; vomiting; delirium; unconsciousness; collapse. Death.

Autopsy.—Caries of right petrous. Rupture of sigmoid sinus. Thrombus of right transverse sinus, both carotid sinuses, circular sinus of Ridley, left cavernous sinus, superior petrosal sinus, and right ophthalmic vein. Purulent degeneration of the thrombi, and inflammation of the walls of the above named sinuses. Purulent infiltration of the connective tissue of the right orbit. Chronic œdema of pia-mater and arachnoid. Numerous pneumonic and gangrenous centers in both lungs.

Case 164.—Politzer on the Ear, page 539. Treated by Burkhardt-Merian, of Basle. Female, age twenty-five. Left ear. Chronic otorrhœa; pain in left side of head, and mastoid; Wilde's incision; no pus. Later, collapse; swelling of left eye-lid; exophthalmus; pupil sluggish; mastoid opened; pus found. Later, swelling of right eye-lid, and right exophthalmus; upper eye-lid incised; found pus. Death.

Autopsy.—Cholesteatoma of tympanum, mastoid cells, transverse sinus, and incisura mastoidea. Thrombo-phlebitis of left transverse sinus and jugular veins. Basilar meningitis. Ichorous coagulum in inferior petrosal sinus and cavernous sinus. Phlebitis of ophthalmic veins on both sides.

Case 165.—Treated by J. Orne Greene. Female. Right ear. Chronic otorrhœa; pain in ear; vomiting; dizziness; chills; meatus swollen; pain and œdema over mastoid, and especially over mastoid foramen and adjacent occipital bone. Temperature and pulse elevated.

Operation.—Mastoid opened; no pus; improved. Later, pain and swelling over mastoid muscle. Death.

Autopsy.—Purulent swelling over clavicle. Purulent mastoid periostitis. Sulcus of lateral sinus carious. Carious opening in tegmen-tympani. Thrombus in lateral sinus. Pus under dura-mater at sinus.

Case 166.—*Edinburgh Medical Journal*, November, 1879. Treated by Kirk Duncanson. Male, age thirty-seven. Left ear. Acute otorrhœa; swelling

BOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

Present History.	Result.	Autopsy.
Pain over mastoid; temp. 103°; pulse 92°; drum-head injected; perforation of drum-head; violent pain in ear and head; painful mastoid; mastoid opened, pus liberated; transverse sinus seen at bottom of incision; later, violent pain in temporal region; divergent strabismus of l. eye; later, temp. 99°; pulse 55°; ptosis of l. upper lid; loss of sensibility over lower extremities; skull trephined at tempero-parietal region; dura tense; dura incised; puncture of temporal lobe; pus evacu- [illegible] ment; later became worse, coma, death	Death .	Pus at chiasm. Pus in lateral ventricles. Abscess in temporal lobe.
P [illegible] ing; mastoid tender; temp. 101°; mastoid opened, pus evacuated; improvement; suspended breathing; artificial respiration; successful; mastoid opening enlarged; dura exposed; exploratory needle introduced, upward and backward; pus evacuated	Death	Abscess of cerebellum. Pus in sulcus for transverse sinus. Thrombus in transverse sinus. Necrotic opening through tegmen-tympani.

and redness over mastoid; pus came from an opening one-quarter of an inch in front of the membrana tympanum; pressure over mastoid caused the pus to flow more freely. Operation refused. Death.

Autopsy.—Pus in arachnoid space all over the brain. Dura healthy. Upper anterior surface of petrous was carious.'

Case 167.—Archives of Otology, April, 1892. Treated by C. Truckenbrod, of Hamburg. Male, age fifty-four. Left ear. Previous history, deafness and tinnitus for ten days.

Diagnosis.—Exudation in tympanum; made a paracentesis; removed serum. Later, a furuncle developed in the meatus; tympanic discharge became purulent. Later, caught cold; pain in ear and head; temp. 104°; enlarged opening in drum-head. Later, opening again enlarged; continued pain in head; vertigo; paresis of right facial; aphasia; temp. medium; paresis of right arm.

Operation.—Mastoid opened; no pus; no necrosis; roof of mastoid cavity opened; dura exposed; no pus; dura opened, and brain exposed; no pus; exploratory puncture made, forward and upward, and pus evacuated; orifice enlarged by knife, and drainage tube inserted; cavity antiseptically irrigated; iodoform gauze used. Recovery.

Case 168.—Archives of Otology, April, 1892. Treated by C. Truckenbrod, of Hamburg. Male, age twenty-nine. Left ear. Previous history not given. Pain over mastoid; temp. 103°; pulse 92°; drum-head injected; perforation of drum-head; violent pain in ear and head; painful mastoid; mastoid opened; pus liberated; transverse sinus seen at bottom of incision. Later, violent pain in temporal region; divergent strabismus of left eye. Later, temp. 99°; pulse 55°; ptosis of left upper lid; loss of sensibility over lower extremities. Skull trephined at temporo-parietal region; dura tense; dura incised; puncture of temporal lobe; pus evacuated. Improvement. Later, became worse; coma. Death.

Autopsy.—Pus at chiasm. Pus in lateral ventricles. Abscess in temporal lobe.

Case 169.—Archives of Otology, April, 1892. Treated by C. Truckenbrod, of Hamburg. Male, age twenty-five. Left ear. Previous history not given. Pain; aural suppuration; vomiting; mastoid tender; temp. 101°; occasional unconsciousness; mastoid opened; pus evacuated. Improvement. Suspended breathing; artificial respiration; successful. Mastoid opening enlarged; dura exposed; exploratory needle introduced, upward and backward; pus evacuated. Death.

Autopsy.—Abscess in cerebellum. Pus in sulcus for transverse sinus. Thrombus in transverse sinus. Necrotic opening through tegmen-tympani.

(*To be continued.*)

BOOK REVIEWS.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION, *Volume Tenth. Edited by* J. EWING MEARS, M.D., Recorder of the Association. Philadelphia: 1892.

This volume of most excellent reports of papers read at the meeting of the Association, May 31, June 1, and 2, 1892, is singularly defective in making no mention so far as we can discover of the place where the meeting was held.

This volume is particularly valuable in that it contains a complete index of the papers read before the Association from its first organization to the last meeting.

Dr. P. S. Conner of Cincinnati, was the presiding officer at the late meeting.

Dr. Nicholas Senn, was elected President for the ensuing year, and Dr. J. R. Weist Secretary, but where and at what date the book before us does not tell.

A MANUAL OF MEDICAL JURISPRUDENCE. By ALFRED SWAIN TAYLOR, M.D., F. R.S., revised and edited by THOMAS STEVENSON, M.D., London. Eleventh American edition with *citations and additions* from the twelfth English edition, by CLARK BELL, Esq., President of the American International Medico-Legal Congress of 1893. 787 pages, 56 illustrations. Price, cloth, $4.50; sheep, $5.50. Lea Brothers & Co., Phila., 1892.

We have examined the above entitled work with more than usual interest, not only on account of the fact that it has gone through numerous editions and is well-known to the profession; but because in the preface of the learned American editor it is stated that much new matter has been added and a large number of authorities cited to aid council in preparing briefs, etc, A careful examination of the work shows that its value has indeed been enhanced, but we confess to a feeling of disappointment that the work has not been more thoroughly and exhaustively done. The author and English editor have cited very few American authors and those not always correctly. While perhaps this was to be expected of English authors, still the profession have a right to expect that an American who holds himself out as a member of so many learned societies as does Mr. Bell on the title-page, should remedy this defect and relieve the book of its insular character. The legal side of the editorial work has been more thoroughly done than the medical side, which is what one would naturally expect considering the fact that the editor is not a medical man. We are constrained to state, however, that much matter is included in the legal notes which, while valuable and interesting has no earthly bearing upon the subject of medical jurisprudence. This is notably the case with the note on expert evidence beginning on page 52, in which we learn among many other interesting but irrelevant things, that "masters of vessels or experienced seamen may give their opinions on questions pertaining to nautical science or affairs," to sustain which proposition, which no rational man would ever think of disputing at the present day, no less than twenty-two cases are cited.

On the other hand matters which, by reason of their importance merit an exhaustive treatment are merely touched upon or not even mentioned. The subject of malpractice for example, receives at the hands of the American editor only one and one-half pages, and even these show traces of hasty preparation.

References to American medical literature which abound in valuable and instructive cases (not in courts of law) are very few, so few as to lead one to believe that the field of periodical literature has not been explored by the editor.

For example, the subject of hypnotism is not mentioned in the index, and we have not found it treated in the text. Instances like the above might be multiplid.

Nothwithstanding all these indications of hasty or inadequate preparation of this edition, the work is still valuable but by no means so valuable as the profession have a right to expect.

A Manual of Organic Materia Medica, being a guide to materia medica of the vegetable and animal kingdoms, by John M. Maisch, Ph. M., Phar., D., fifth edition with two hundred and seventy illustrations. Philadelphia; Lea Brothers & Co. 1892.

The fact that a fifth edition of this excellent manual has been called for within two years of the publication of the fourth, is sufficient to confirm the value value of the work. Indeed, it has been so frequently reviewed and has become such a standard text-book, that any extended comment at this time is needless.

The present edition differs mainly from the former in the incorporation of the added knowledge upon this subject in the last two years, and the use of accent marks upon the systematic names of plants and animals. Several illustrations have been added, partly replacing others, further eludicating structural peculiarities.

We cannot let the occasion pass without commending the superior quality of press work shown in this volume. The wood-cuts show with surprising clearness.

Materia Medica and Therapeutics. By L. F. Warner, M.D. Philadelphia. Lea Brothers & Company.

This little work of 223 pages forms part of "The Students' Quiz Series," now being issued by Lea's. While we have heretofore expressed doubts of the value of works of this character they have undoubtedly come to stay. The work before us is admirably arranged in the form of questions and answers especially adapting it for the use of students classes in which one of their own number act as leader. It also facilitates brevity and conciseness of expression, a *sine qua non* in a work of this sort.

The author says that he has aimed at "a convenient and concise statement of the most important facts of materia-medica and therapeutics." A careful reading of his pages shows that he has achieved success upon these lines, and within the limitations imposed by the size of the work. There are important omissions, and perhaps we would differ from him in some of his conclusions but to state them would we think, be hypercritical in the light of our conflicting authorities.

Wisconsin State Medical Society. 1892.

The Annual Volume of Transactions of this organization indicates an excellent working Society. The papers show a spirit of research on the part of many of the members that is exceedingly commendable.

The President of the meeting was Dr. G. F. Witter, of Grand Rapids, and Dr. C. S. Sheldon, of Madison, the Secretary. For the ensuing year Dr. B. T. Phillips, of Menominee, Mich., was elected President, and Dr. C. S. Sheldon, of Madison, re-elected Secretary. Number of active members 332.

A Plea for Public Health in Villages.—When a fire breaks out in a village, every person considers it a duty to give a general alarm, and, especially, prompt notice of it to the fire departments, and all citizens coöperate for the speedy extinction of the fire. If this were not done, the property in the village would be quite generally endangered by the possible spread of the fire. Why is it that when a dangerous communicable disease breaks out—one which may spread and endanger quite generally the *lives* of persons in the village—there is, so frequently, no such general alarm and prompt notice to a well-organized department of the village government, and no general coöperation for the extinction of the disease? Is not a person's life of more consequence than his property? Is not the saving of the *lives* of their children of as much consequence to the inhabitants of the village, as the saving of their *property?* If each person were forced to answer this question, relative to his own children, I believe that he would feel like a degraded, miserly wretch if he did not promptly sacrifice his property in defense of the life of his child. Yet, collectively, the citizens generally do *not* do for the protection of *life*, what they do for the protection of *property*—they do not maintain a well-organized health department so generally as they do a well-organized fire department. I believe it is because they do not so generally know that lives may be saved by well-organized health departments, or because they do not know the value of human life to the community. —H. B. Baker, M.D., in *Annals of Hygiene.*

The Pan-American Medical Congress.—The appearance of the preliminary announcement of the first Pan-American Medical Congress, to be held in Washington next September, is at once a promise, a guarantee, and a call to action. Few have an adequate conception of the magnitude of this undertaking, and of its significance to American medicine. It is very evident that it has now entirely passed the stage of doubt or indecision. The first thought that strikes one in glancing through the pamphlet of the preliminary announcement is as to the tremendous business and executive demands made upon the officers, and that so far have been splendidly met by the energetic Secretary-General, the President, and others. The officering of the long lists of the Sections has been a work of the greatest difficulty and finest judgment, and one can only marvel at the excellence of the results.

But it is now time for all American physicians to respond to the invitation and the opportunity in a spirit of patriotism to our country and loyalty to our profession. It is not now a question of the success of the Congress, but as to whether we shall or shall not give that early and effective sympathy that constitutes each of us a helper and a part of the success. The heavy expenses of organization, amounting to something like $5,000, must be paid by the advance registration-fees. The Secretary-General is Dr. Charles A. L. Reed, Cincinnati, Ohio, who, upon request, will forward copies of the preliminary announcement. The Treasurer is Dr. A. M. Owen. Evansville, Ind., to whom should be remitted the registration-fee.—*Medical News.*

Ipecac in Uterine Inertia.—Drapes (*Der Frauenarzt*, March, 1892) says this remedy, in simple atony of the uterus, is a powerful agent in producing uterine contraction during the first and second stages of labor.

In general, two or three doses of from 10 to 15 drops of the wine of ipecac, given at intervals of ten minutes, produce, in a short time, marked activity of uterine action and a rapid birth. It is much better than ergot, as it does not produce tetanic contraction, but only induces normal and regular expulsive efforts.—*The Therapeutic Gazette*, July 15, 1892, p. 481.

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SATURDAY, NOVEMBER 26, 1892.

THE ANTITOXIC PROPERTIES OF THE BLOOD OF CHOLERA CONVALESCENTS.

The researches of KLEMPERER (THE JOURNAL Oct. 29,) have shown, that while the blood serum of normal men possesses either no influence or but a very feeble one upon the toxicity of cultures of cholera bacilli a decided antitoxic effect is exerted by the blood of people who have been inoculated with cholera bacilli subcutaneously. The antitoxic effect of the blood serum of patients recovered from genuine cholera has now been tested by LAZARUS of Berlin, *Berliner klin. Wochenschrift*, Nos. 43 and 44, with remarkable results.

Our conception of the term immunity has gained in precision very much since clinical observations have been supplemented by laboratory work. From the earlier researches of PASTEUR on anthrax and chicken cholera it became evident that there may be different degrees of immunity. After BEHRING had discovered that an important—if not the most important factor in acquired immunity is the acquired antitoxic property of the blood, EHRLICH taught us how to measure this property and thus express the degree of immunity in terms of mathematical accuracy.

KLEMPERER found it possible to influence the economy by his inoculation with cholera bacilli under the skin to such an extent, that one-half to one cc. of the person's serum injected into a guinea pig protected the latter against a fatal dose of a cholera culture. In the natural immunity following convalescence from an attack of cholera LAZARUS found the antitoxic effect of the serum 5 to 10,000 times as great as in the blood of the vaccinated person. One-tenth of a milligram of the serum was sufficient to protect a guinea-pig against death while ½ m. gr. prevented even any transient effect of an otherwise fatal dose of virulent cholera-culture.

This marvellous antidotal influence occurs only if the protective injection is made before the poisonous cholera-toxines are injected into the peritoneum. After the introduction of the cholera poison protection can be had only from enormous doses of serum up to 1 cc. and from these only if they are given during the incubation period of the first few hours. After the effects of the cholera poison had become manifest by the lowering of the animal's temperature, no curative results could be obtained from serum in any quantity.

The author suggests that a trial might be made in man to utilize the antitoxic properties of the blood of convalescents during the premonitory diarrhœa of cholera, and before systemic poisoning has set in.

THE SURGICAL TREATMENT OF URETERAL WOUNDS.

There are but few reported cases of uncomplicated wounds of the ureters, though one or both of these ducts have not unfrequently been injured in abdominal operations on the ovaries, uterus, or vagina, GUSSEROW and other authorities stating that this accident has happened to most surgeons that have frequently performed vaginal hysterectomy; and traumatism during parturition has been the most frequent cause of uretero-vaginal or uretero-uterine fistula.

DR. F. KAMMERER published in the *New York Medical Journal* for July 2, a contribution to the treatment of ureteral fistula, in which he reported two cases of uretero-abdominal fistula caused by difficult abdominal operations, in each of which he subsequently successfully performed nephrectomy. The latter operation, first performed by SIMON for the cure of ureteral fistula, has been performed about an equal number of times for the cure of uretero-abdominal and uretero-vaginal or uretero-uterine fistula. Of the thirteen recorded cases of nephrectomy for ureteral fistula collected by KAMMERER, only two resulted fatally; one death being due to insufficiency of the remaining kidney.

When the ureter has been divided by a stab or gunshot wound, or accidentally in an operation, what should the surgeon do? In the recently published *American Text-book of Surgery*, the authors recommend that the divided or torn end should be brought to the surface of the loin or of the vagina and sutured there. This would probably entail a subsequent nephrectomy, an operation that these authorities countenance by referring to it as the measure for cure of the fistula, although they do not recommend its immediate performance so as to prevent the formation of a fistula.

Transplantation of the end of the ureter to the abdominal wall is not a simple operation, and KAMMERER proposed sometime ago that the renal end of the ureter should be ligated or secured by forceps. He has since withdrawn his recommendation of a ligature, because GUYON's experiments have demonstrated that, even under ordinary conditions, it will produce the symptoms of renal retention; the ligature causing by its firm constriction of the ureter the same reflexes that an impacted ureteral calculus occasionally excites. Closure of the renal end of the ureter by forceps, with an iodoform gauze tampon thereabout, would permit the removal of the forceps in the event of renal symptoms developing; and if the tampon had not excited adhesions that completely shut off the peritoneal cavity, any leakage of urine would tend to the surface by means of the tampon.

Instead of transplanting the ureters to the loin or vagina, DR. R. HARVEY REED has suggested in the *Annals of Surgery* for September, that in injuries of the ureters in consequence of ovarian or other neoplastic adhesions, or in case of disease of the bladder, the ureters should be implanted in the rectum. He has made some interesting experiments on animals to determine the feasibility of this procedure, and his experiments show that the unilateral implantation of the ureter into the rectum was a possible and practical surgical procedure, though bilateral implantation always terminated fatally in the animals experimented on. He found that the rectum readily accommodated itself to the presence of urine, and that the stools were, not necessarily liquid or frequent. He believed that the experiments showed that it was a safer plan to implant a ureter than to perform nephrectomy. This operation has yet to be performed on the human subject, though DR. REED's results commend it in preference to lumbar or vaginal implantation of the ureters, and it possesses the additional desirability of dispensing with a subsequent nephrectomy.

While nephrectomy has been immediately and successfully performed in such cases of ureteral ininjury, still such an additional operation is not without risk when a patient has just been subjected to the shock of a capital abdominal operation. And as DR. KAMMERER very pertinently suggests, while the increased demands upon the remaining kidney during the days following nephrectomy may be easily responded to when no other complication is present, they might prove too great when the patient is already struggling against the shock consequent upon a severe and protracted laparotomy. Furthermore, the operation of nephrectomy is far from being one of the most favorable procedures in surgery; though the condition of both kidneys may be ascertained to an extent at the laparotomy during which the ureter is injured.

The improbability of securing immediate union in a severed ureter in which there is no loss of ureteral tissue, would make the risk of intra-peritoneal extravasation of urine too great to attempt to suture the severed ends of that duct.

For the reasons above mentioned it may be concluded that in wounds of the ureter complicating abdominal operations immediate nephrectomy is undesirable, although its performance is not unjustifiable in traumatic injuries of the ureter *per se.*

That while the lumbar or vaginal implantation of the ureter has been successfully performed, secondary nephrectomy has often been resorted to for the cure of the troublesome ureteral fistula. And that the successful implantation of the severed ureter into the rectum, offers a measure that avoids the inconveniences and dangers of each of the foregoing procedures.

"PYOSALPINX."

"Pelvic cellulitis" existed theoretically, based upon purely clinical phenomena, and the term has almost disappeared from the modern nomenclature of disease, while the condition so long described as such has at last received its proper place in surgical science.

That pelvic cellulitis may occur cannot be denied, but that it is rare, even as a result of post-puerperal infection, has been proved by hundreds of accurate observations, both at the operating table and by post-mortem examinations. The classical essays of BERNUTZ and GOUPIL lay long forgotten under the rubbish of dogmatic and incorrect teaching, until the master mind of LAWSON TAIT, aided in Germany by HEGAR and MARTIN, and in America by JOSEPH PRICE, forced the attention of the profession to the exact pathology upon which "pyosalpinx" is founded. It is fortunate for the peace of mind of the common sense practitioner that his imagination is no longer taxed with a mysterious cellular absorption, for he can now readily understand an infection of a septic, gonorrhœal or tubercular nature, traveling by continuity of tissue from the endometrium to the tube, and too frequently he has had reason to regret a careless interference with the aseptic uterine cavity.

Nature in her effort at self-protection employs here, as with foreign bodies generally, a combination of the three methods, absorption, encapsulation and extrusion, and while she may be more or less successful in her effort, too frequently the result is disastrous to the life or health of the patient. Absorption and resolution of a mild infection of the tube without the formation of a pyosalpinx may take place, but often destroys the ciliated epithelium, thus rendering possible a future ectopic pregnancy. An encapsulation of the pus in the tube forms a pyosalpinx which is a source of constant danger through recurring attacks of pelvic peritonitis, or a possible perforation into the free peritoneal cavity. If unilateral, and pregnancy occur, the abscess may be ruptured during parturition, causing a fatal puerperal fever.

Extrusion of this pus by means of adhesions to the bowels and intestinal opening, either spontaneous or by the surgeon's knife, is usually an unfortunate occurrence through the resulting fecal contamination and inefficient drainage, while vaginal or more superficial openings may leave a suppurating stump of an ovary and tube which, like a sequestrum of necrosis in an involucrum of healthy bone, keeps up a chronic discharge and undermines the health of the victim. These undeniable facts lead to but one conclusion, that the early and complete removal of a pus tube by cœliotomy is surely indicated. The mortality of Joseph Price of less than 3 per cent. in his magnificent work is, however, almost unique, and the average death-rate, as given by McLaren, of St. Paul, in a recent paper, is about 9 per cent. in the hands of experienced operators. The plea for conservative treatment then, from the standpoint of immediate mortality of the operation itself, rather than the sentimental one so frequently advanced as to the removal of a useless and dangerous organ, is worthy of the utmost attention. The claim of electricity depends upon a basis of inaccurate diagnosis. Vaginal puncture is a blind and uncertain procedure, and as a pus tube frequently contains two or three complete strictures separating it into several pockets, the chance of emptying them all is small at best. The new treatment of curetting and iodoform gauze pack of the uterus, so useful in an endometritis, is an exceedingly insecure method of treatment in pyosalpinx. A very small number of well authenticated cases in which a pyosalpinx or cystic tube has been emptied into the uterus, cannot counterbalance the danger of such operative interference. The large majority of reports in which there has been a supposed uterine drainage of a pus tube, have been shown by J. Bland Sutton to be merely the discharge of retained uterine secretions, and in any event, the benefit of, such practice is probably not greater than follows free purgation. Any operation which opens the abdomen and then does not remove the pyosalpinx does not deserve the name of conservative, and is not good surgery, whether done by stitching the tube to the incision, or the late recommendation of the French to make a vaginal hysterectomy and leave the pus tubes to drain.

RAILWAY SURGERY AT THE PAN-AMERICAN MEDICAL CONGRESS.

A Section of Railway Surgery of the Pan-American Medical Congress has been organized with Dr. C. W. P. Brock, of Richmond, Virginia, as Executive President. A full list of officers has been provided for each of the constituent countries. At the Eleventh Annual Meeting of the Wabash Railway Surgical Association—the first organization of the kind—Dr. C. B. Stemen, of Fort Wayne, was by unanimous resolution, requested to prepare a paper on "Organized Railway Surgery," and read the same before the Section on Railway Surgery of the Pan-American Medical Congress. At the same meeting Dr. Hal C. Wyman, of Detroit, offered the following, which was unanimously adopted:

Resolved, That each member of this Association solicit his Congressman to interest himself in legislation in favor of the Pan-American Medical Congress.

The Samuel D. Gross Prize, Philadelphia Academy of Surgery.—The first quinquennial prize of one thousand dollars, under the will of the late Samuel D. Gross, M.D., will be awarded in 1893. The conditions annexed by the testator are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in Surgical Pathology or Surgical Practice, founded upon original investigations, the candidates for the prize to be American citizens." It is expressly stipulated that the successful competitor shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery. The essays, which must be written in the English language, should be sent to Dr. J. Ewing Mears, 1429 Walnut St., Philadelphia, before June 1, 1893. Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, and containing the name and address of the writer. No envelope will be opened except that which contains the successful essay. The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year. The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

SELECTIONS.

Biologic Therapeutics.—Medicine has entered upon a new era in therapeutics, which may appropriately be designated biologic. The scientific world greeted with cordial admiration the synthetic products of the chemist's skill, but we stand to-day on the threshold of developments the magnitude of which is beyond comprehension. Since the birth of the young science of bacteriology practical minds have assumed an expectant attitude. Skepticism has largely given way to confidence, and excessive enthusiasm to a calmer judgment. It soon became apparent, in a manner and to a degree in which it had never been before, that many diseases carried with them the elements of their own cure. Of course, it had been recognized that certain diseases are self-limited, and the phenomena of natural and acquired immunity were duly appreciated; but it required the knowledge gained by the advances in bacteriology to afford a rational explanation of these various phenomena. There is yet much to learn. The beginning has but been made. Enough, however, has been seen to teach that disease has its chemistry, and that the treatment of the future will depend upon a knowledge of this fact and the application of chemic laws. It is not too much to hope that the treatment of the future will largely be specific, that is, in the employment of a definite remedy in the treatment of a given affection, just as mercury and iodine are to-day employed in the treatment of syphilis, quinine in the treatment of malarial disease, and salicylic acid in the treatment of rheumatism. The groundwork of this new system of therapy has been already laid by Pasteur as to hydrophobia, by Koch in regard to tuberculosis, by Behring, Kitasato, Wasserman, and Ehrlich as to diphtheria, by Tizzoni, Centanni, and Cattani as to tetanus, by the Klemrerers as to pneumonia, by Ferran, Haffkine, and Klemperer as to cholera.

Stern (*Drutsche medicin. Wochenschr.*, 1892, No. 37, p. 827) has made an interesting contribution to this subject. He had previously demonstrated that human blood-serum possesses the property of destroying the bacilli of typhoid fever, He now endeavored to determine if the bactericidal activity of the blood-serum to the bacillus of typhoid fever is increased in persons that had recovered from an attack of that disease; if the blood of such persons had any curative action upon animals inoculated with the bacilli of typhoid fever; and if this blood has the property of neutralizing the poisons generated by the bacilli of typhoid fever. Seven cases were examined, six at intervals of from five days to five and a half weeks after defervescence had set in, and one, who was under treatment for sciatica, seventeen and a half years after an attack of typhoid fever. It was found that the bactericidal activity of the blood-serum to the bacilli of typhoid fever was distinctly diminished in persons recently convalescent from typhoid fever, in comparison with the conditions present in persons that had never had typhoid fever. It was further found that, while the serum of a healthy person exerted no modifying influence upon the toxicity of boullion-cultures of the bacilli of typhoid fever with which it was mixed, the serum of persons recently convalescent from typhoid fever exerted a distinctly modifying effect of an attenuating character. It was also demonstrated that a filtered extract of sterilized cultures of the bacilli of typhoid fever could be safely injected in doses otherwise lethal, if previously admixed with the blood-serum of persons recently convalescent from typhoid fever.

From the foregoing it is clear that the protective influence of the blood-serum of persons recently convalescent from typhoid fever is not dependent upon a destructive action upon the bacilli themselves. It will not do, however, at once to jump to the conclusion that the serum neutralizes the toxic products of the bacilli. It is also possible that the serum renders the animal organism less susceptible to the influence of the toxic products. This doubt would be removed if it were shown that the diminution in the toxicity of a mixture of the serum and the sterilized extract were progressive.

The observations here recorded are most interesting, and are deserving of thoughtful consideration. They should be repeated and extended. They seem to bring us nearer to a correct conception of natural immunity and natural cure. —*Medical News.*

Why we Should Have a Medical Officer in the President's Cabinet.—During the recent assault made upon the Atlantic fortifications of the great United States, the country was in danger of utter destruction, and every individual in peril of his life on account of the clash of authority which occurred between the federal and city authorities. Fortunately the federal officers gained the day, and great credit is due to them as well as to the Health Officer of New York City in keeping out the merciless foe of mankind. Although cholera entered New York, it can scarcely be said to have gained a foothold, and yet we shall await anxiously the developments of the coming spring, as it is now conclusively shown that cholera germs may lie dormant for months, and reappear under favorable climatic and filth influences.

But why have a repetition of so unseemly a disagreement? Why endanger the lives of sixty-fixe millions of people by a clash of any sort? Why not establish a medical cabinet officer as other civilized nations have, who shall have supreme authority in all such matters? We can see no more valid objection to a Minister of Public Health than we do to a Secretary of State or a Secretary of the Navy, for are not our commercial interests the lives of millions, as well as our very existence threatened on such critical occasions as we recently witnessed in New York harbor? Why, therefore, should we not urge our claims of protection from a foe more deadly than the invading Britons. By all means, let us have a medical officer of public health in the cabinet. Let him be well provided with a small army of medical men to guard us against further invasions. The health of our nation should be of supreme importance. It is estimated that the monetary loss to New York City alone by the present visitation of cholera was over 2,000,000 dollars! This fact alone should be sufficient to call the attention of our law-makers in Washington to the importance of the subject. Let us hope the matter will receive the attention of our next Congress. Surely no measure of greater importance can be introduced.—*Pacific Medical Journal.*

MISCELLANY.

Wanted.—Will pay 10 cents per copy for the following numbers of The Journal: Vol. 2, No. 4, Jan. 26; No. 19, May 2, 1884. Vol. 5, No. 2, July 11; No. 3, July 18, 1885. Vol. 6, No. 6, Feb. 6, 1886. Vol. 3, No. 4, July 26, 1884. Vol. 4, No. 22, May 30, 1885; No. 23, June 7, 1885; No. 24, June 14, 1885; No. 25, June 21, 1885; No. 26, June 28, 1885. Also, Vol. 12, No. 3, Jan. 12, 1889.. Vol. 12, No. 3, Jan. 19, 1891.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from November 12, 1892, to November 18, 1892.

First Lieut. Henry R. Stiles, Asst. Surgeon (recently appointed), is assigned to duty at Jefferson Bks., Mo.

First Lieut. Paul F. Straub, Asst. Surgeon (recently appointed), is assigned to duty at Ft. Riley, Kan.

First Lieut. Francis A. Winter, Asst. Surgeon, is relieved from duty at Ft. Riley, Kan., and is assigned to duty at Ft. Wingate, N. M.

First Lieut. A. E. Bradley, Asst. Surgeon, is relieved from duty as attending surgeon, Hdqrs. Dept. of the Platte, Omaha, Neb., and is assigned to duty at Ft. Sully, S. Dak.

Capt. Benjamin Munday, Asst. Surgeon, is relieved from duty at Ft. Sully, S. Dak., and is assigned to duty at Ft. Niobrara, Neb.

First Lieut. Harry M. Hallock, Asst. Surgeon (recently appointed), is assigned to Ft. McPherson, Ga., for duty at that post.

First Lieut. Robert S. Woodson, Asst. Surgeon, is relieved from duty at Ft. McPherson, Ga., and is assigned to duty at Ft. Barrancas, Fla.

First Lieut. George J. Newgarden, Asst. Surgeon (recently appointed), is assigned to duty at Ft. Sheridan, Ill.

First Lieut. Charles F. Kieffer, Asst. Surgeon, is relieved from duty at Ft. Sheridan, Ill., and assigned to duty at Ft. Meade, S. Dak.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending November 19, 1892.

Asst. Surgeon Geo. T. Smith, from Coast Survey Str. "Hassler," and to the "Vermont."

P. A. Surgeon C. H. T. Lowndes, from the U. S. receiving ship "Vermont," and to the "Hassler."

P. A. Surgeon W. F. Arnold, to hold himself in readiness for orders to the U. S. S. "Monterey."

P. A. Surgeon H. N. T. Harris, to hold himself in readiness for orders to the U. S. S. "Bancroft."

Surgeon G. F. Winslow, to hold himself in readiness for orders to the U. S. S. "Monterey."

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ORIGINAL ARTICLES.

THE U. S. ARMY RATION AND MILITARY FOOD.

Read in the Section of Physiology and Dietetics at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY CAPT. CHARLES E. WOODRUFF, M.D.,
ASSISTANT SURGEON U. S. ARMY.

Col. Jos. R. Smith, Surgeon U. S. Army, read before the Ninth International Medical Congress, a paper on "The best Ration for the Soldier," in which he very carefully analyzed the ration then existing, compared it with the rations of foreign armies and the dietaries of various laborers, and discussed various other points. To go into this matter again would be threshing out old straw, and the present paper therefore is confined to a description and discussion of the present ration which has been somewhat modified in form and considerably modified as to its management since the time at which the former paper was written.

An army is a collection of disciplined, active, healthy men in the prime of life, to be used as a fighting force in the service of the nation, and it is the object of military administration to so govern and train these men that they shall not fail when fighters are needed. Everything is to be done which can reasonably be expected to increase their efficiency, and it is an actual fact that nearly every military law and regulation has for its ultimate effect the increased efficiency of the individual soldier as a fighter. Unless the man is kept in health, he is useless, and for this reason all subjects which relate to his health are given much thought. Clothing, food, shelter and exercise are the principal subjects for consideration for if any of them are improper, there is sure to be a loss of efficiency, but it is probable that deficiencies of food or improper food will cause damage or disaster more quickly than anything else. For instance, most of the diseases of the war of 1812 were due to defective food, and in ninety per cent. of the cases the flour was at fault. In the war of the rebellion similar reports were often received, and the tales of actual hunger that all veterans recount, are too numerous by far. It is evident, therefore, that the ration should be the subject of most careful thought, and all reasonable means be tried to adjust it to the exigencies of military life.

A "ration" is the technical term for the sum total of the daily allowances of food issued to the soldier in accordance with law. Its present constituents are given in full in tabular form below.

The candles and soap are considered a part of a ration, though not food.

MANAGEMENT OF RATION.

It must not be thought that the soldier is restricted to the actual articles that are mentioned in the table, for by a fairly efficient system, the company commander is permitted to make outside purchases of food. If there is any excess of food uncooked which will not be used by the company, he sells back to the commissary the excess, technically called the "savings," and with the proceeds buys what he thinks proper. These savings are a very important matter, and amount in the aggregate to a fair sum per company, although per man they may average but from 1 to 4 cents per day. This fund is still further augmented by the receipts from the Post Exchange; this institution is a general store for the sale to soldiers of small articles he may need, such as stationery, tobacco, lunches, beer, etc., the prices being a slight increase over the cost, and the net profits being turned into the company funds—in other words, a coöperative retail store which makes each soldier a silent partner, though not subject to any losses.

TABLE I.—U. S. ARMY RATION.

Component.	One Article of Each List.	
Meat	12 oz. pork 12 oz. bacon 22 oz. salt beef 20 oz. fresh beef 20 oz. mutton 14 oz. dried fish 18 oz. pickled fish 18 oz. fresh fish	In 10 days it is usual to give 7 days' of fresh beef, 2 of bacon and 1 of salt pork. The other articles are very seldom issued.
Bread . . .	18 oz. flour 18 oz. soft bread 16 oz. hard bread 20 oz. corn meal.	Soft bread is the invariable issue in garrison.
Dried Vegetables . . .	2 2-5 oz. beans or peas. 1 3-5 oz. rice or hominy.	
Fresh Vegetables . . .	1 lb. potatoes or 9-10 potatoes and 1-10 onions or 8-10 potatoes and 2-10 onions or 7-10 potatoes and 3-10 canned tomatoes 7-10 potatoes and 3-10 vegetables, such as cabbage, beets, carrots, turnips, squash, etc.	
Coffee . . .	1 3-5 oz. green coffee. 1 7-25 oz. roasted coffee. 8-25 oz. tea.	
Sugar	2 2-5 oz. sugar. 16-25 gill molasses or syrup.	
Condiments and additional articles	8-25 gill vinegar. 16-25 oz. salt. 1-25 oz. pepper. 6-25 oz. candles. [In the field.] 16-25 oz. soap.	

During the first three months of 1892, the average daily receipts and expenditures per man at Fort Assinniboine, Montana, were as follows:

From ration	2.72	cents.
From exchange	2.58	cents.
From other sources	.34	cents.
Total receipts	5.64	cents.
Expenditures for extra food	4.11	cents.

It will be noticed that the profits from the Post Exchange enabled the daily average expenditures for food to exceed the savings from the ration by 1.39 cents per man. These figures are the averages of nine companies and troops, each having about fifty men.

It is forbidden company commanders to use the savings from the ration except for the benefit of the soldier's table fare, so that there shall be no cheese-paring of the ration in order to save money for other purposes. Very recently part of the savings of the ration was turned into post, band, regimental funds, and what not, and the money used for objects from which the soldier derived no food benefit whatever. It is a curious thing that when in 1864 it was discovered that the soldier could not eat all of his ration, which had been increased in 1861, and that the savings went into post and regimental funds, it apparently did not occur to anyone to abolish these funds, but instead it was deemed wise to reduce the ration to what it had been previous to 1861, notwithstanding the fact that the soldier was often underfed. It was over 25 years before this setback was remedied. At present then, if, owing to climate or other causes, the soldier does not want all of the food to which he is entitled, the money savings must either accumulate in large amounts or be used for the purchase of those little extras, which, added to the bare needs of existence, make life much more worth living. In addition it must be said that large company funds are, as a rule, frowned upon, and, other things being equal, the officer who allows the money to accumulate instead of spending it judiciously for the benefit of his men is not considered to be doing the best. As a general rule it may be safe to say that when a company is so situated as to be liable to be called suddenly into the field, its commander considers it wise to accumulate and keep on hand a certain fund of from $200 to $500 for the purchase of extras in the field whenever practicable, for to be compelled to subsist on the plain ration is looked upon as a misfortune. To keep on hand a fund of one to two thousand dollars is not considered wise management.

In drawing beef at the larger posts, the contractor usually supplies a fore quarter and a hind quarter alternately. At those posts on the frontier where forage is very scarce, the beef is necessarily somewhat tougher than it would be if the cattle could be properly fed before killing. The allowance (1¼ pounds) is gross weight, the actual amount of meat is much less.

It rests with the Department Commander usually as to how much of each kind of article the soldier shall have when the law allows a choice. It is perhaps usual to order that in ten days there shall be seven issues of beef, two of bacon and one of pork, but if the soldier can with the help of outside purchases, manage to subsist for ten days on the beef allowed for seven days, he saves the money value of one day's pork ration and two of bacon. It might be added that "savings" of fresh beef and fresh vegetables are not permitted, the company being compelled to draw all their allowance, though this regulation does not forbid them to sell privately any they have drawn and which will not be used, but become spoiled by decay.

The management of the flour is taken out of the hands of the company commanders entirely and all flour turned into the post bakery, where all the bread used by the men is baked. The ration of flour is 18 oz., and the soldier is entitled to either that or 18 oz. soft bread, but as that amount of bread can be made from about 10 to 14 oz. flour, there is a large saving of flour, which is sold and after deducting expenses of the bakery, the surplus is returned to the company. Flour needed in the companies for puddings, griddle cakes, and the like, must be purchased from the company fund. There is usually a good baker among the soldiers at each post or several men who have an aptitude for that trade and who easily learn. These men are detailed for the bakery work and receive extra pay. With but rare exceptions the bread supplied to the soldier is excellent.

By means of the above system of management, a company fund is kept from which the extra diet on holidays can be purchased when there is a convenient market, as for instance turkey on Thanksgiving and Christmas, eggs on Easter and so on. At all other times the fund is constantly drawn upon for the purchase of extras. This fund is considered of the highest importance, and new restrictions are being constantly thrown around it to prevent savings from the ration being diverted to other purposes than for the increased efficiency of the soldier's table. The existence of a good fund for the purchase of extras, has always been taken for granted. An army cook book is issued to troops, and it is full of useful and excellent recipes, but 75 per cent. of them call for articles not supplied in the ration, such as butter, lard, eggs, flavoring and seasoning, and the unfortunate company that is minus a company fund can find no use whatever for over half of these recipes.

The ration is designed for healthy men, and admits of no flexibility to suit the sick. For the latter who might die if forced to subsist on the harsh components of the ration, another arrangement is made. The ration of the sick, or its money value, is given to the surgeon who buys the extra diet that is needed, which purchases are further increased by such articles as beef extracts, condensed milk, etc., supplied by the Medical Department for the use of the sick only.

SELECTION OF RATION.

An army must often be fed at a great distance from the market, and it is therefore evident that the chief objects in view in the selection of the soldier's food must be facility of transportation and ease of preservation in all climates. Articles that are bulky or easily damaged by rough handling, and those that are not easily preserved from decay are at once ruled out. It need scarcely be mentioned that the articles must be produced in abundance throughout the country, neither imported nor the particular prepations of a few manufacturers. Couple with this, the fact that the articles must be so inexpensive as to refute any charges of extravagance and it will be readily understood that with a few exceptions, the the ration contains about all the articles that it is possible to put in it at present without calling on foods that are preserved, canned or otherwise specially prepared. In regard to charges of extravagance it may be remarked in passing, that as the present ration usually costs less than 15 cents it is rather far fetched to talk of extravagance. There are few healthy laborers in respectable standing in civil life who subsist on less than one dollar a week.

For these reasons, the soldier's ration has always been simple and dry. Indeed, until quite recently, there has been but little change in the ration for 75 years. For instance, omitting details, during the revolution, the soldier's food was essentially: 1 pound beef, 1 pound bread, 1 pint milk, 1 quart beer, and a taste of molasses and dried vegetables, though practically he received but a small fraction of his allowance. In 1785, after the war, it was even simpler, 1 pound beef, 1 pound bread, and 1 gill of rum. The beef was increased to 1¼ pound in 1798, and the bread or flour to 18 oz. at the same time, at which they have since remained except for three years during the rebellion when the bread or flour was increased by four ounces. At this time also (1861–1864) 1 pound potatoes was issued three times a week. From time to time other changes and slight additions were made; in 1818 some dried vegetables (peas, etc.,) were added; in 1832 a small amount of coffee and sugar was issued in lieu of spirits, and there have been numerous changes in salt, pepper and vinegar. The coffee and sugar have remained unaltered for 32 years. At the present time the ration is more liberal than it has ever been before.

Human beings can by degrees become accustomed to any diet, even though it be outrageous; they can subsist chiefly on fruits in the tropics or chiefly on fats in the arctic regions, but any rapid change of diet is disastrous. Now, as the militia when mustered into the service of the United States must subsist on the army ration, it is a cardinal principle that the food supplied must closely approximate that to which they are accustomed. As regards the present ration this is approximately so, but it has not always been the case. The Secretary of War (Mr. Calhoun) in 1818 reported to Congress that the mortality during the wars of the revolution and 1812 from the change of a plentiful mode of living to that of the camp, "was probably greater than from the sword." As Americans live more liberally than Europeans in similar walks of life, we have at once an incontrovertible reason why the U. S. ration should be more liberal than that of any European army. The American laborer has meat every day, while the European laborer may have it but once a week, and the American soldier must and does have meat three times a day.

There is another point to which a mere reference is necessary. In cold climates no article can be used in the field in winter, that would be spoiled by freezing, or by alternate freezing and thawing. This blocks out a few articles put up in cans in fluid preservative, potatoes and all fresh vegetables, and fruits and various other articles.

Until quite recently (within 50 years), it was presumed that if the ration kept the soldier alive it was sufficient. The idea that it should keep him in health is modern, and logically follows both from increased knowledge of the etiology of faulty food in the production of disease, and from a contemplation of disastrous epidemics on land and sea, following upon a long continued improper food. The smallest amount of food that will keep a man alive has been approximately known for centuries, and though modern experiments make our knowledge vastly more detailed, accurate, and scientific, they have added little to the knowledge that one pound of bread and 1¼ meat daily will subsist a man for quite a long period. When we come to discuss the amount and kind of food necessary to keep him in health we are on debatable ground. Our knowledge on this subject is not yet complete enough, we have only theories and opinions. A man may appear to be healthy, but it is not quite certain that he may, on the one hand be taking too much of one variety of food, generating a tendency to plethora or lithæmia, or on the other hand living in a constant tendency to anæmia or scrobutus, with all the liability to contract other diseases from lessened general vitality and resisting powers. We all know men whose usual daily food is even more simple than the ration, but we know also that there are times, as during occasional visits from home, when they eat other things that perhaps restore the balance. Patients have often been restored to health by a change of diet made necessary by a recommended change of scene.

VARIETY.

The soldier is occasionally so situated for prolonged periods that he leads an essentially sedentary life, and the total amount of food energy needed is far less than what is supplied. It is in such circumstances that there must be more variety than the ration affords. When he works hard he can subsist on an unvaried diet and feel well, but if he lives in enforced idleness, the poorer menu seen in table 12 would soon cause satiety. Practically and usually, variety is secured by purchase or gardens, but occasionally it cannot be so secured. The gardens at military posts are considered of great value and fostered with as much care as possible. Seeds and implements are furnished to a certain extent, suitable ground reserved for the purpose, and men detailed for the work and excused from other duties. There is a feeling that the soldier should not be compelled to raise his own vegetables. The company is liable, in some places, to be called into the field and the garden neglected to its ruin, and the daily military routine with its exactions and privations is liable to discourage in the soldier such continuous labor as is the lot of farmers. Practically it is found that there are several men in each company who have been raised as farmers, and who are anxious to do the work.

The diet can be greatly improved by the addition of soups, providing the cook is efficient. Bones are too often thrown away, and though they cannot supply much nutriment, as explained on page 659, yet soups may be made the vehicle for the nutriment of rice, beans, tomatoes and other vegetables. Those companies blessed with good, economical, and energetic cooks usually have soups quite frequently, and the extra comfort thereby gained more than compensates for the trouble.

In regard to the variety of the ration, the thought is now being evolved that it is no more necessary to have a ration that will keep in all climates, than it is to have a uniform that can be worn in all climates, whether 50 below zero, or 130 above. As the food can be purchased within the climatic district in which it is used, the ration in the extreme north can be of such a nature that it might spoil in the extreme south or *vice versa*. If such a radical idea ever becomes practicable it will greatly facilitate the process of making the ration flexible. A few years ago it was thought that the soldier of the southern summer must eat the same kind of fat pork, etc., that was used in the northern winter, but at present it is recognized that there must be a distinction, and as time goes on there is a greater and greater tendency shown to adapt the food to the place and circumstances. The addition to the ration of fresh vegetables in 1890, has been one of the greatest advances made since 1818, when dried vegetables were added in lieu of some of the old issues, and various other substitutions permitted. The occasional issue of dried or fresh fruits of the cheaper and more easily preserved varieties would be a boon highly appreciated by the troops in the hot districts of the south.

If two ships were to start from New York, each to be absent several years, one in the Arctic regions and the other in the tropics, no one would even dream of provisioning them alike. Yet if two armies were similarly to start from New York for long periods, one to the extreme north, and the other to the hottest parts of the south, the law presumes that both shall carry essentially the *same* rations. We have not yet reached the point where it is decidedly recognized that the variety in the ration must be great enough to permit of sufficient flexibility to suit extremes of climate.

As all armies in the world have been fed on the same general principles, there is scarcely any doubt that the dryness and the sameness of the food is a great factor in the production of the tendency to drunkenness, proverbial among soldiers and sailors. Drunkenness can never be eradicated from an army. The class of men from whom the soldiers are recruited are not tee-totalers, but it is safe to say that there has been a phenomenal decrease in the amount of drunkenness in recent years, and it may be justifiable to predict a still further decrease as the food becomes more varied. The writer once canvassed the men at a small post, Fort Gaston, California, and found that there was a large per cent. of total abstainers, and at that time, he was certain that it was a larger percentage than among mechanics and laborers in civil life; but the post was most favorably situated, was blessed with an enormous garden for vegetables, there was a profusion of fruit in season, and game could be obtained throughout the year. As elsewhere mentioned, the sameness of diet of German soldiers during the Franco-Prussian war when Ebswurst was used, was compensated for by the large stores of wine found in the vicinity of Paris, and by the occasional issue of brandy, a still further proof of the tendency to drink alcoholic beverages when food is scanty and unvaried.

It is probably true that at posts in cold climates in winter when there is much idleness, and the diet is not varied, the soldiers suffer more from chronic constipation than an equal number of healthy civilians. It would be impossible to substantiate such a statement because reference is made to those slight cases which never appear on the sick report, but who try to treat themselves with patent medicines. If it is true generally, it is due in part at least to the sameness of diet and the absence of fresh fruits and vegetables. Since the addition of potatoes all the year, and of fresh vegetables in summer, there may have been an improvement, but how much, if any, is not known.

The enormous number of cases of rheumatism occurring during the rebellion and since the rebellion in veterans may not be entirely due to the exposures, as popularly supposed. These men were hardened to exposure and should not have had more rheumatism than hunters, trappers, and the aboriginal Indians. The limited, often insufficient, ration and the absence of fresh articles may have been one of the factors at work. Indeed, new facts are being continually brought forward, showing new relations between a disease and the habitual diet of a patient. Diet also in its relation to diseased states, is becoming an all important item of therapeutics. It may be justifiable therefore to express a doubt as to whether in the long run, the bare, unadorned unvaried ration as issued, will tend towards the production of perfect health and the greatest efficiency, if eaten to the exclusion of everything else.

COOKING.

Every soldier is supposed to be able to cook his own ration. He can no more do it than can every mechanic go into his own kitchen and prepare his own meals. Cooking is a fine art and cannot be learned, though some of its technique can be taught. There must be aptitude. Officers of experience state that unless the soldier shows much aptitude as a cook it is useless to try to teach him. In every company there is usually one man who is fairly expert, and he is detailed as company cook and excused from other duties. It is almost needless to remark that he is a most important adjunct of the military organization. It has been said that the cook is the real manager of a company, and as he is good or bad, so is the company good or bad. The writer once served at a post where one company, blessed with a born cook among its soldiers, lived in a state as nearly approaching luxury as could be desired, while another organization with exactly the same ration, but having a thorough-bred idiot for a cook, lived on miserable fare and were discontented and thoroughly unhappy. Indeed, if the soldier's ration were as good and varied as the country affords, it could be ruined by some of the men who preside over the army cooking. This matter has become so important, that it is now recommended on all sides that a special cook be enlisted for each organization as is the case in the navy. It may be said that the soldier is occasionally absent from his company and in that case should be able to cook his own ration, but in that case, he cannot carry utensils, and he is furnished with a special cooked ration to be described, and in addition the uncooked ration is supplied to the company only when cooking is practicable.

Though the frying pan is a recognized evil in civil life, wastes food by making much of it indigestible, causes dyspepsia and untold evils, and is a general all around nuisance to physicians, yet it is well nigh impossible to do without it in the army, particularly in the field. A trapper or frontiersman will cling to his frying pan as his dearest friend, and the soldier's fire indeed admits of only the simplest kind of cooking—frying and boiling. The evil in the field is not so great as would be supposed, for it is well known that outdoor life certainly increases the digestive powers to a most wonderful extent. The writer once knew an officer who was a confirmed, pessimistic dyspeptic, whose diet had to be almost as carefully selected as a child's, and whose illness was probably due to lack of exercise, for when he took the field and was compelled to do fatiguing work, he ate large quantities of fried food, dripping in grease, and not only was he comfortable, but he grew fat and was actually cheerful. In the garrison diet lists of tables 12 and 13 it will be noticed that there are very few fried articles.

At certain large posts an innovation in the way of a general mess is now in practical operation, the cooking is all done in a central kitchen and the men all partake of the same fare. This change is being tried in the interest of economy and efficiency, it being supposed that there is less waste and better cooking. It is possibly too soon to give a definite opinion as to the value of the general mess in the army. For field service, particularly in the western country, where a company is so often on duty detached from its regiment, the company mess will probably prevail, because the utensils must be kept on hand, and the system must be constantly practised in order to be efficient, and in addition it is not practicable with camp fires, and portable ovens to cook for very large numbers in temporary camps or on the march.

Very closely connected with cooking is the proper serving of food. When soldiers are in the field, each one must look after his own affairs and take care of his own tin plate and cup, iron knife, fork and spoon, and nothing breakable is carried. Everyone who has been camping knows how difficult it is to take along many appliances, and how makeshifts must be used when serving food. In garrison there has been a decided change in recent years. Each company formerly bought its own dining outfit which was very elaborate in some cases, but quite poor in others; at present all are supplied by the Quartermaster's Department with very fair utensils, plain white dishes, silverplated knives, forks, and spoons, etc. These utensils make the table look very well, and as scrupulous cleanliness is invariably the rule, the appearance of the soldier's dining room in general is conducive to good appetites. This great attention given to the dining room and serving of food has a very decided elevating effect upon men. In civil life unusual brutality in men is not infrequently accompanied by the grossest table manners, and each is cause and each is effect, reacting upon one another. Compel a man to observe decency at table, supplying him with a neat, clean and orderly outfit, and the elevating effect is sure to come. Military men of the last century believed that to keep a soldier up to a proper discipline he should be clothed roughly, given the simplest kind of overcrowded barracks, and fed like a hog, every modern improvement being considered enervating. Could any of these dead officers see the dining rooms of some of our soldier barracks, they would surely think that the service was going to the dogs. It has been elsewhere remarked that when hardships slowly reduce vitality, the man is made less able to exist under more privation in the field. When there are no luxuries and everything has to be plain in order to be durable and serviceable, it is utter nonsense to talk of the enervating effects of luxuries. The present policy of improving the soldier's table service certainly improves the ration on principals known to every physiologist. The companies where the table is still bad are becoming the exceptions to the rule.

GARRISON RATION.

In calculating the food value of the soldier's garrison ration it has usually been the custom to take the articles mentioned in the regulations. This ignores the food from outside purchases, often considerable, and does not show what the soldier actually eats. The writer has been at considerable pains to find out exactly how much the soldiers ate at Fort Assinniboine, Montana, during the ten days from March 11 to 20, 1892. There were supplied to each company, blank forms on which were entered the itemized amounts of food on hand at the beginning, received during the ten days, and on hand at the end, from which was calculated the amount eaten, due allowance having been made for waste which was also carefully measured. The results of these experiments are detailed in tabular form below. These figures are accurate within moderately small limits for the weighings were carefully done under the direction of the company commanders, and wherever it has been possible to verify the results by other determinations they agree. The results are of considerable interest because it is the first time this work has been done since the ration was increased by the addition of vegetables, since it has been forbidden company commanders to use the saving of the ration for other purposes than for the table, and since the fund for extras has been so largely increased by the profits of the Post Exchange. When it is considered that at this isolated post, outside purchases are limited, that the Exchange is scarcely yet in full swing and that the garden-truck had been already consumed, it can be readily imagined that under more favorable conditions the variety of food might be far better and that the amounts of alimentary principles somewhat different, perhaps larger.

TABLE II.—PERCENTAGE COMPOSITION OF EDIBLE PORTIONS GARRISON RATION.

	Water.	Protein.	Fats.	Carbo-Hydrates.	Salts.	Energy, calories per lb.	Authority.
Bacon, fat	20.0	8.00	69.5	...	2.5	3080	Estimated fr. L. tables
Beans	12.6	23.10	2.0	59.2	3.1	1615	Atwater.
Pork, salt and fat.	12.1	.90	82.8	...	1.2	3510	"
Sugar, gr	2.0	...	...	97.8	.2	1820	"
Sugar, brown issue	3.0	...	...	96.5	.5	1795	Estimated fr'm L. & A.
Flour	12.5	11.00	1.0	74.9	.5	1644	Atwater.
Beef	55.0	17.10	27.0	...	.9	1460	"
Potatoes	78.9	2.10	.1	17.9	1.0	375	"
Onions	87.6	1.1	.3	10.1	.6	225	"
Oatmeal	7.6	15.10	7.1	68.2	2.0	1850	"
Cornmeal	15.0	9.20	3.8	70.6	1.4	1645	"
Canned apples	83.2	.20	.4	15.9	.3	315	" (fresh apples)
Dried apples	25.0	.90	1.8	71.5	1.4	1418	Estimated from A.
Tapioca or corn starch	2.0	...	...	97.8	.2	1820	Atwater.
Butter	10.5	1.00	85.0	.5	3.0	3615	"
Syrup	43.7	...	...	55.0	2.3	1023	Estimated from A.
Lard	12.0	.60	83.4	...	4.0	3570	" " "
Rice	12.4	7.4	.4	79.4	.4	1630	Atwater.
Canned corn	81.3	2.80	1.1	13.2	.6	345	" (green corn).
" tomatoes	96.0	.80	.4	2.5	.3	80	" (fresh tomatoes).
Macaroni and vermicelli	13.1	9.00	.3	76.8	.8	1406	Koenig.
Milk, fresh	14.1	.843	.802	1.069	.164	418	Letheby — ounces per pint of milk.
" condensed	25.0	17.00	11.0	44.00	3.0	1595	Pavy.
Peas	12.3	26.70	1.7	56.10	2.9	1565	Atwater.
Raisins	40.0	.40	...	24.00	.6	440	Estimated from L.
Cheese	35.0	33.00	22.0	5.00	5.0	1600	Atwater (average).
Prunes	30.0	2.50	...	12.0	.6	140	Approx. estimate from Fresenius.
Cabbage	92.0	2.10	.6	5.5	1.1	155	Atwater.
Ham	41.5	16.7	39.1	...	2.7	1960	"
Apricots, canned	50.0	2.00	...	30.0	.6	460	Estimated from Fresenius.
Barley	...	13.00	2.7	76.0	3.0	1800	Letheby.
Chocolate	12.0	20.00	50.0	10.0	4.0	2650	Payen.
Sausage	41.2	13.80	42.8	...	2.2	2065	Atwater.
Oysters	87.1	6.00	1.2	3.7	2.0	230	"
Salmon, canned	63.6	21.60	13.4	...	1.4	965	" (fresh salmon)
Crabs	...	15.0	1.0	...	..	526	Pavy.
Crackers	...	10.3	9.4	70.5	..	1900	Estimated from A.

L.—Letheby. A.—Atwater.

In table 2 there is stated merely for reference the percentage composition of the various articles consumed. Some of these values assumed for the articles are probably different from those used in making the experiments whose results are taken as a guide. In all cases there was an authoritative estimate on which to base the assumed values. As the percentages are averages, the results obtained by using them cannot be considered as precise or accurate but were approximations whose probable errors may be large.

TABLE III.—UNCOOKED FOOD OF GARRISON RATION FOR 10 DAYS. WEIGHTS IN POUNDS. DAILY AVERAGE, 440.4 MEN.

	Gross Weight.	Waste.	Net Weight.	Water.	Protein.	Fats.	Carbo-hydrates.	Salts.	Calories.
Bacon	273¾	3¾	270	54.00	21.60	187.65	. . . .	6.75	831,600
Beans	428½	. . .	428½	54.05	99.10	8.57	253.80	13.29	691,228
Pork	343¾	31	312¾	37.85	2.82	259.00	. . . .	13.14	1,097,753
Sugar, brown	731	. . .	731	21.93	. . . .	. . . .	705.42	3.66	1,312,081
Flour	4379	126½	4252½	531.56	467.78	46.78	3185.12	21.26	6,991,110
Beef	5025	1131	3894	2196.70	682.97	978.38	. . . .	35.95	5,409,392
Potatoes	5116	1386	3730	2943.00	78.33	3.73	667.67	37.30	1,398,750
Onions	700	150	550	481.80	7.70	1.65	55.55	3.30	123,750
Oatmeal	44	. . .	44	3.34	6.65	3.13	30.01	.88	81,400
Cornmeal	85	. . .	85	12.75	7.82	3.23	60.01	1.19	139,825
Apples, canned	10	. . .	10	8.32	.02	.04	1.59	.03	3,150
Apples, dried	183	. . .	183	46.85	1.65	3.30	130.85	2.57	259,494
Tapioca [26] and Corn Starch [13]	39	. . .	39	.78	. . . .	. . . .	38.14	.08	70,980
Butter	58	. . .	58	6.09	.58	49.30	.29	1.74	209,670
Syrup	165	. . .	165	70.60	. . . .	. . . .	90.60	3.80	168,795
Lard	107½	. . .	107½	12.90	.65	89.66	. . . .	4.30	383,775
Rice	26	. . .	26	3.22	1.92	.14	20.65	.14	42,380
Corn, canned	63	. . .	63	51.22	1.77	.70	8.32	.38	21,735
Tomatoes, canned	332	. . .	332	318.72	2.66	1.33	8.30	1.00	26,560
Maccaroni [51] and Vermicelli [1½]	52½	. . .	52½	6.88	4.73	.15	40.32	.42	73,815
Milk, fresh, pounds	31	. . .	31	25.61	1.58	1.50	2.00	.31	12,552
Milk, condensed, pounds	31	. . .	31	7.75	5.27	3.41	13.64	.93	49,442
Cheese	10½	½	10	3.50	3.30	2.20	.50	.50	16,000
Prunes	35	20	15	10.00	.75	. . . .	4.00	.25	3,500
Cabbage and Sauerkraut	250	50	200	182.00	4.20	.60	11.00	2.20	31,000
Ham	32	4	28	11.63	4.68	11.00	. . . .	.76	54,880
Apricots	20	. . .	20	13.50	.40	. . . .	6.00	.12	9,200
Barley	5	. . .	5	. . . .	.65	.14	3.80	.15	9,000
Peas	4½	. . .	4½	.55	1.20	.08	2.54	.12	7,043
Raisins	14	4	10	6.45	.05	. . . .	3.50	.08	6,153
Chocolate	3	. . .	3	.48	.60	1.50	.30	.12	7,950
Totals	18598	2908¾	15689¼	7120.50	1113.21	1657.17	5343.66	154.82	19,446,960
	Pounds.			Grams.					
Daily average per man	4.22	.66 15½%	3.56 85½%	733	145	171	550	16	4,416
Counting flour as bread, amount eaten is 4 lbs. per man. Per cent. of amount eaten	. . . .	. . . .	. . . .	45	9	11	34	1.	. . . .
Including Table V (salts only), grammes	. . . .	. . . .	. . . .	733	145	171	550	34	. . . .
Including estimated amounts in Tables V and VII	5	¾	4¼ about 2.8 lbs. water free.	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .

REMARKS ON TABLE III.

The amounts of beef were calculated as follows,—After deducting 993¼ pounds bone, and 37¾ pounds other wastes, the rest was considered as edible, and its composition calculated according to Atwater's percentages, but there was a further waste of about 100 pounds fats, and that amount was subsequently deducted from the amount of fats and its heat energy taken from the number of calorics.

There were 4,546 rations of bread used, amounting to 5,114¼ pounds of bread, a ration of bread being 18 ounces. From this is deducted 167¾ pounds of bread wasted, leaving the amount eaten, 4,946½ pounds of bread. During the month of March, 10,300 pounds of flour were used in the Post Bakery to make 13,669 pounds of bread, so that the 4,946½ pounds of bread eaten represents 3,727½ pounds of flour. The bread wasted *(167¾ pounds) contains 126½ pounds* of flour, so that the flour used was 3,854 pounds. To this is added 525 pounds flour purchased for other purposes, making the total flour used 4,379 pounds, and eaten 4,252½ pounds.

The bacon is estimated from the tables of Letheby, neither of the estimates there given can refer to the fat and smoked variety supplied to the soldier.

Everything below onions was purchased from the company funds and some of those above onions, that is, some beef, flour, potatoes, onions and sugar.

TABLE IV.—PERCENTAGE OF WASTES.

Bacon	1.40	
Pork	8.00	Only 9 lbs. were reported, but this was increased to 31 lbs., to include bones, etc.
Bread	3.30	Crusts and small unavoidable wastes.
Beef	22.50	*19¾ bone, 2¾ fat and other wastes.*
Potatoes	27.09	Parings and defective ones.
Onions	21.04	“ “ “
Prunes	33.00	Stones and other wastes.
Cabbage	45.00	
Ham	12.00	Estimated.

Table 4 needs scarcely any explanation, but attention might be called to a few facts. The bones of beef were weighed with great care, and the result 19¾ per cent. agrees almost exactly with Atwater's tables. The percentage of bone usually given (17) is too small. The law that states that the soldier is to get a ration of 20 ounces of beef has always been interpreted to mean gross weight, so that he gets but 15½ ounces edible meat, and as physiologists in referring to the army ration, imply that the food is essentially 1 pound bread and 1¼ bone free meat, there has always been a misapprehension. In Dr. Dalton's minimum diet of 19 ounces of bread, 16 ounces of beef, and 3½ ounces of fat, the meat is all edible. It is an open question whether there is any justification for considering the law as referring to bone-free beef; an overpowering spirit of generosity would suggest the latter.

In the case of potatoes there is a large waste, 27.09 per cent. which is what might be expected, so that there is really served to the soldier only 11 ounces instead of 16.

Onions have a waste of 21.04 per cent. which is apparently correct.

Bread, beef, potatoes and onions were very carefully determined. There were wastes in the following articles, but so small in amount that they have been ignored: beans, rice, macaroni, hash, dried apples.

Where there are efficient cooks, the kitchen waste contains nothing of any food value to the soldiers, and is thrown away as in civil life. Though it may have a value for fertilizer or for live stock, there is usually no market. It is often the custom for each company to keep hogs, but the surroundings are apt to get in such an unsanitary condition that the practice is usually abandoned on the score of health. The bones might be of value, particularly in this State, for the market value of bone dust is said to be sixty dollars a ton, and taking the local value of bones at thirty dollars, there is a loss of one thousand dollars a year at this post from the bones thrown away.

TABLE V.—ADDITIONAL ARTICLES CONSUMED.

	Daily per man.	Allowance.	
338 lbs. green coffee	1.23 oz.	1.60 oz. or	
8 lbs. tea	.03 oz.	.32 oz.	
20 gall. vinegar	.14 gill	.32 gill	Allowance is large, to allow of making a saving to be used in making sauerkraut and pickles in the fall.
128 lbs. salt	.46 oz.	.64 oz.	
10 lbs. pepper	.036 oz.	.04 oz.	
11 bottles flavoring extracts.			
3 lbs. mustard.			
24 lbs. baking powd'r			
6 lbs. currants.			
5 gall. pickles.			
4 kegs pickled pigs' feet	Though containing much energy, it is omitted because composition is unknown, and the actual amount per man is very small.		

Table 5 contains a list of articles which were supplied and consumed, but as they contain practically no nutriment, they have been omitted from table 3.

TABLE VI.—CONSUMPTION AND ALLOWANCE PER MAN.

	Daily per man.	Allowance.	
4,379 lbs. flour	15.91 oz.	18 oz.	Includes purchases.
4,946½ lbs. bread	17.97 oz.	18 oz.	
343¾ lbs. pork	1.34 oz.	1.2 oz.	
273¾ lbs. bacon	1.00 oz.	2.4 oz.	
5,025 lbs. beef	18.30 oz.	18.0 oz.	
5,116 lbs. potatoes	18.5 oz.	12.8 oz.	80% of vegetables.
700 lbs. onions	2.5 oz.	3.2 oz.	20% of "
428½ lbs. beans	1.5 oz.	2.4 oz.	
763 lbs. sugar	2.7 oz.	2.4 oz.	
64 lbs. butter	.2 oz.	.....	
137 lbs. lard	.5 oz.	.....	
15 gall. syrup	.4 gill	.....	

Table 6, giving the amounts used per man with the allowance of a few articles in table 3 is given merely to supplement the latter table and contains only the items used in the greater amounts.

The following articles were in greater quantities than the ration, the excess being purchase: Beef, potatoes, flour, and sugar. The savings were chiefly on flour (from bakery) and bacon. Almost all of the companies bought beef, potatoes, lard, syrup, and baking powder, and a few bought flour, butter and bread. The use of butter, lard or syrup bears out the ideas of certain officers that one of these articles should be an article of issue and not of purchase, on the supposition that the company fund should be used to purchase articles of occasional use and not articles of constant use. The expenditures for extra food during these ten days were larger than the average expenditures for the three months of January, February, and March. With rare exceptions the soldier uses more than his allowance of potatoes.

FOOD EATEN AT POST EXCHANGE.

Table 7 gives the itemized amounts of food eaten at the Post Exchange lunch counter during the ten days. The men who ate this food were, according to the officer in charge, wholly among the 440 men of the companies, the other soldiers at the Post who board themselves do not patronize this lunch counter. Some of the results are necessarily assumed for no authentic percentage tables of values are probably in existence, but each value was calculated from the tables of value of similar articles in Pavy's work on Foods. It is probable that the aggregate error is not large, as the articles referred to, canned oysters, shrimps, canned fruit, mince meat, etc., are in small amounts and besides do not contain much energy per pound.

TABLE VII.—AMOUNTS OF FOOD EATEN AT POST EXCHANGE.

	Protein.	Fats.	Carbo-hydrates.	Alcohol.	Calories.
161 lbs. flour	17.71	1.77	121.00	..	264,684
6 " butter	.06	5.10	.03	..	21,690
55 " ham	9.19	21.51	...	..	107,800
6 " sugar, brown	...	...	5.80	..	10,770
16 " " granulated	...	...	15.65	..	29,120
30 " cheese	9.90	6.60	1.50	..	18,000
67 " sausage	9.25	28.70	...	..	138,355
20 " lard	1.20	16.68	...	..	71,100
100 " canned fruit	.20	.40	16.00	..	13,500
80 " oysters	4.80	1.00	2.96	..	18,400
11 " salmon, canned	3.02	1.88	...	..	13,510
14 " shrimps, "	2.10	.15	...	..	7,365
10 " prunes	.15	...	4.50	..	4,500
36 " crackers	3.71	3.39	25.38	..	68,400
10 " eggs	1.50	1.05	..	..	7,210
11 " milk	1.87	1.21	4.81	..	17,182
10 " mincemeat	.80	1.00	.20	..	60,782
Total, 616 lbs	65.16	90.11	197.86	..	902,668
Per man, daily, .15 lbs. Grams	7	9	20	..	205
Beer, percentage composition by weight	.54	...	1.8	4.15	....
20 oz. daily per man { Ounces	.11	...	.960	.83	286
20 oz. daily per man { Grams	3.	...	27	21	286

In the Post Exchange there were sold during the ten days, 3,744 bottles (quarts) of beer. The officer in charge reports that the 440 men of the companies whose food is being calculated, drank their proportional share, and as there was a daily average of 473 men present, it would give an average of 24 ounces per man. As some men drank while others did not, it is probable that a few of the former occasionally took more than they could assimilate and counting the undigested as waste, 20 ounces per man are therefore assumed as the daily average consumption, and this corresponds with the minimum allowed to a healthy man by Parkes, one to two pints of 20 ounces each. The percentage composition of this beer was furnished by the analyst of the brewing company and the calculated values are stated separately in order that he who does not believe that the small amount of alcohol and carbo-hydrates of beer can serve any useful purpose in the economy towards the production of energy, can omit the beer if he chooses. Alcohol being between fats and carbo-hydrates in heat production, is assumed to have heat value of 1½ times its weight of carbo-hydrates.

All other alcoholic beverages consumed during the same time are unknown, they cannot even be assumed, and as they add some energy to the sum total, the results given without them can be therefore very safely taken as below the actual alcohol used per man, rather than above it.

Thus the whole amount of food eaten in ten days by 440 healthy, active men in the prime of life, is known within a very few pounds. All sources of outside supply are absent, they can get food at no other places. There is a trader's store, but on inquiry it is stated that the amount of food purchased (crackers, cakes, candy, etc.) is so small that the daily average amount per man is probably less than a gram of each of the alimentary principles. For these reasons much care has been taken to calculate the proper values, in order to give as great an accuracy to the results obtained as is possible, while at the same time illustrating the actual food of the soldier. A word might be said as to the other conditions. The men during this time were fairly active, having daily drills, and fatigue duty, once a week gymastics, and large numbers patronizing the gymnasium and other sports during leisure hours. The weather was cold, averaging 24° F., ranging from 64° above zero to 1° below. It must be remembered that the results represent nothing more than stated, and as elsewhere explained there should be no attempt made to give these figures as the proper food values necessary to keep in health an active man in the prime of life and performing moderate labor. That this food appears to keep the men in health, cannot be denied for an instant.

THE RATION IN THE FIELD.

When troops are in a permanent camp close to markets, and cooking facilities are improvised, the ration may be essentially the same as that already described in garrison. When at a distance from markets and from the base of supplies, it is not so varied, for purchases are impossible and the food is absolutely limited to that which they have been able to carry with them in supply wagons. The ideas of different officers vary somewhat as to what are the best and most palatable articles for camping, but the following is the list from which choice is to be made.

TABLE VIII.—RATION IN THE FIELD.

Meat	12 oz. fat pork or 12 oz. fat bacon.
Bread	18 oz. flour or 16 oz. hard bread.
Vegetables	2 2-5 oz. beans or 2 2-5 oz. peas or 1 3-5 oz. rice or 1 3-5 oz. hominy.
Fresh vegetables	16 oz. potatoes (if they can be carried).
Coffee	1 3-5 oz. green coffee or 1 5-25 oz. roasted coffee or 8-25 oz. tea.
Sugar	2 2-5 oz. brown sugar.

If dried vegetables cannot be cooked, the money value thereof may be issued in meat or bread.

This amounts in alimentary principles to the following:

		Protein.	Fats	Carbo hydrates.	Calories.
Grams.	Maximum	106	320	540	5,166
	Minimum	64	240	460	4,722
Average		85	280	500	4,944

The detailed figures are not given, as the averages thus shown are sufficient for practical purposes of comparison. The most striking fact about this ration is the deficiency of protein. The fats are not in excess, considering the conditions of service, and the high rate of heat energy is due in great part to the fats of the pork or bacon. These facts are enlarged upon below.

RATION ON THE MARCH.

When on the march where good camps can be made every night and transportation facilities are abundant, the ration is the same as for the camp already described, but when the troops are compelled to march every day, certain changes may become necessary. The dried vegetables are in such small amounts that they do not alter the relative proportion of the various constituents, and they are omitted in the following discussion. If the country is well settled, fresh meat and vegetables may be procured by purchases from the company fund, but in the wilderness it is a choice between pork and bacon. For its convenience in frying, bacon is usually carried. Pork is not so convenient but by the following method is said to be preferable. Capt. W. F. Spurgin, 21st Infantry, a recognized authority on the ration, writes that during the Nez Perces campaign in 1877, when the troops were following the Indians hundreds of miles, he would on making camp, start a fire and have the pork thoroughly boiled; this was put away to cool and be used during the next day. At the same time some soup stock, which was carried along, was quickly made into a good soup for dinner. Whenever it was convenient and bones could be secured, enough soup stock was made by prolonged boiling to last several days. Beans were also prepared by cooking them over night.

The hard bread (16 ounces) and flour (18 ounces) do not differ much in their ultimate composition and it is immaterial which shall be carried. When the camps are convenient enough, some form of biscuits can be made with the yeast powder supplied, and in such circumstances flour is taken.

In regard to the nutriment contained, it *is* material whether pork or bacon be used. The fat salt pork contains but a small amount of protein (.9 per cent.) and a large proportion of fat, probably 85 per cent.; the bacon contains far more protein and less fat, but the actual percentage composition has not been experimentally determined. The analysis of bacon by Letheby (8.8 protein and 73.3 fat) refers evidently to dried breakfast bacon; the soldier's bacon contains less meat and more water and is therefore estimated to contain 8 per cent. protein and 69.5 per cent. fat. If fat pork is taken there is a great deficiency of protein and an apparent excess of fats (320 gram.), but the fats are not excessive when it is considered that the active out door life of the camp with its exposures, makes necessary an increased supply of the fats. Indeed, 320 grammes are even below the amounts given by Atwater as consumed by various Massachusetts mechanics. As the bacon contains nearly as much fat as the pork and much more protein it would appear to be a better material for continued use, when fresh meat is not procurable, and it is probably preferred by a majority of officers. If ham or salt beef were used to supply protein, they would not contain enough fat nor relieve the desire for fresh meat. Both of these articles are taken into the field, and the salt beef, though derided during the war as "salt-horse," is even yet considered a desirable article by officers who used it for years Difficulty of transporting it on rapid marches weighs against it for field use; but for garrison use, an officer of large experience has lately spoken of it in very high terms, as an occasional issue optional with the company commander. In the future it may be entirely supplanted by canned meats, fresh or corned. If the camp is a permanent or large one, the matter of pork and bacon may not arise, for either a beef contractor will be on hand with cattle, or cattle will be purchased by the commissary officers, in accordance with regulations, and driven along with the troops when forage or grazing is procurable. There is an actual craving for fresh meat, and whenever it is possible, it is supplied by purchase; hunting is encouraged whenever practicable, but often fresh meat is entirely barred out by the barrenness of the country particularly in Indian campaigns. It is this need of fresh meat which induces the foraging expeditions of soldiers in camp—expeditions which often are disastrous to the occupied territory.

LIMITATION OF VARIETY OF DIET IN THE FIELD.

In the above field rations, the limitation of variety is due to either difficulty of supply or inefficiency of portable cooking utensils. The nearer the camp is to the markets of civilization, or the more permanent it is, the more nearly will the food approximate to what is used in garrison. There is no theoretical reason why the food in camp should be a particle different from what is used at home, provided there is more of it and there are more fats to supply the extra energy needed for warmth and work. The writer once asked an old packer and teamster accustomed for many years to the life of the wilderness, what kind of foods were best for camp; after considerable thought he answered, "anything good to eat," there was no theory in that answer—it was purely practical experience.

When soldiers are in the field and are limited to the bare ration, and more particularly when lack of transportation limits the ration to bacon, hard tack and coffee, they suffer very badly from constipation. Company commanders who understand this matter, have a simple remedy for their men, in dessicated fruits. These are purchased and carried along, and being light and uninjured by freezing they are always available. There is so much water in fresh fruit, that when dried out, 1 pound of evaporated or dessicated apples at 4 cents will make enough apple sauce for many men, and the expense to the company is trifling. The Canadian mounted police are said to have dried fruit as part of their ration. The commissary officer at Fort Assinniboine, Mont., Lt. J. F. Morrison, who used dried fruit in the field for his men, is very enthusiastic as to their great excellence in combating constipation. Besides all this, as antiscorbutics, they are of great value should the field service last any length of time, for though scurvy could never occur in garrison, there would be a tendency to it, with the above limited diet.

After hard work when one is depressed and worn out, there is nothing that relieves all ill feelings so soon as a hot drink that is at the same time stimulating. Spirits have been totally discarded with soldiers for this purpose as thoroughly vicious in results. Wines and beer are used in foreign services, but public sentiment will never allow them in the United States. It has been proposed to issue to soldiers in the field, extract of beef, whose stimulating qualities in the form of beef tea are too well known to be enlarged upon here. Now if the extract of beef can be combined with nourishment in the form of soups, a vast deal is to be gained. There can be no doubt that strong soups are highly appreciated in camp, and so experienced an officer as Capt. Spurgin states that it was his custom to make soup for his men, and that he found nothing like it as a hunger killer. Now, if the hunger-killer in the form of soup contains sufficient nutriment for part of a meal, it is a most desirable thing for hungry men who may have to sleep with the heavens for a tent. There is a popular delusion which ascribes to clear soups a much higher nutritive value than they possess. Raw bones contain considerable nutriment, not only fats but protein, and are capable of sustaining life. Though some animals can easily digest raw bones, man cannot; perhaps he could very readily if they were ground to powder. Pavy states that one pound of bones, contains as much carbon as there is in $\frac{1}{3}$ pound of meat, and as much nitrogen as there is in $\frac{1}{7}$ pound of meat. All this refers to raw bones, and in dilating upon the value of bones as a food, writers usually overlook a most important matter. The Paris Gelatine Commission, after ten years of uninterrupted experiments reported that "it is not possible by any known process to extract from bones an aliment which, either alone or mixed with other substances, can take the place of meat," and furthermore they reported that "every kind of preparation, such as decoction with water, the action of hydrochloric acid, and particularly the transformation into gelatine diminishes, and seems even, in certain cases, almost completely to destroy the nutritive quality of bones." After fifty years these conclusions, as far as known, are still accepted. By prolonged boiling of bones, the nitrogenous substances are converted into gelatine, which is dissolved in the water. Gelatine has been denounced as a totally useless agent, but it undoubtedly gives up some energy, though it is extremely doubtful if it is of any further use than as a fuel and a very poor fuel at that. It will not support life. When, therefore, the raw bones of beef are thrown away, the soldier loses very little available nutriment except the marrow, but there is a loss of variety of diet, and it has already been shown that variety though often impossible to obtain should always be sought. Soups add so much to attractiveness if nothing else, that they should be given at least four or five times a week in garrison, and in those companies where the bones are all carefully saved and boiled the men certainly do live better. Though all this is true of clear soups which may not contain much nutriment, it is entirely different with thick soups made from leguminous vegetables, or with other mixtures called soups. Pea and bean soup in particular contain quite a large percentage of the various alimentary principles. The difficulty of preparing the soups in the field is obviated by using one of the prepared articles mentioned more fully below. There is one in particular, consisting of a mixture of powdered peas, salts, extract of beef, herbs, etc., and sold in packages under the name of "pea-soup." The powder added to a quart of hot water makes in a few minutes a tolerably fair soup, rich, savory and nutritious. The published analysis, the accuracy of which is presumably correct, gives to a 3½ ounce package the following ingredients:

Protein, 21 grams; fats, 17¼ grams; carbohydrates, 46½ grams.

Now in the field ration there is a deficiency of nitrogen which can be remedied either by using more bacon or by the use of one of these prepared soups. One of these packages would therefore give a ration with the following values:

	Protein.	Fats.	Carbo-hydrates.	Calorics.
Maximum	127	337	586	5,614
Minimum	85	257	506	5,160
Average	106	297	546	5,387

A package of $2\frac{2}{9}$ ounces contains as much energy as the edible portion of the ration of potatoes (11 ounces) and a proposed package of 4 ounces has the energy of 1.8 rations of potatoes, though it contains far more protein and fat though less carbohydrates than the potatoes of the same amount of energy. It is proposed to use this prepared soup in the field in lieu of fresh vegetables allowed by law.

It may be added that in the field in war times, the transportation is usually insufficient. Officers of this military department know it and the subject receives constant attention throughout the world, for on it depends the success of the campaign. Notwithstanding all that is done, impediments will arise, break-downs occur, and roads become blocked. This always results in deficiency of food, for the rations in enormous quantities may be near by but unattainable, and the troops may be actually incapacitated for good fighting. This state of affairs may occur at any time and it is usually unavoidable. Again, in forced marches troops may be able to outstrip the wagon trains and then they must carry their own food. Numerous field dietaries containing ordinary articles of diet have been suggested from time to time for those special conditions, but as they have had time to crystalize into some definite shape and have not done so, it is presumed that they are mostly impracticable.

PREPARED FOODS.

For the same reasons already mentioned above, condensed and prepared foods have probably occupied the attention of military men from time immemorial; and Parke's Hygiene in speaking of these foods says: "For the military surgeon this subject is so important that it is desirable to put the chief facts under a separate Section." He then gives a list of many preparations of powdered meats, etc., but unfortunately states that many of these were unsatisfactory.

The difficulty in preparing and preserving foods is yearly becoming less and less. It is only within recent years that much attention has been paid to the proper preservation of fresh foods, and we can confidently expect in the future to see much further advance. Specially prepared foods have also attained a high degree of excellence; those intended for infants and invalids receive most attention because most demanded. Of the foods for adults probably the most successful so far are the prepared soups. The German army has had for a long time its Erbswurst, a mixture of pea-meal, fat, bacon, herbs, onions, etc., put up in little sausage-like rolls to be carried by the soldiers. Its present percentage composition is not at hand, but it is said to contain protein, fats, carbohydrates and salts in about the proportions needed in a food. The latest preparations are the pea and bean soups, made by an English, and several American firms. In each case the material is a powder more or less dry, and in some cases compressed, and when added to hot water makes a good soup, which is quite palatable to the majority of people. Lieut. W. C. Brown, 1st U. S. Cavalry, to whom the writer is indebted for all of the facts relative to the prepared soups, has used them in the field when the weather was very hot, and when a blizzard buried his camp under 12 inches of snow, and he speaks in no uncertain terms of their great value and excellence, and of the ease with which they can be preserved, transported and made ready for use.

There are very numerous prepared foods, either cooked, condensed, or compressed, which are being brought forward for use in such circumstances as surround people in camp. Dessicated vegetables have been given a trial in the U. S. Navy, and as far as known have not proved objectionable. Almost every variety of food is now being put up in the fresh state and preserved indefinitely, but most of them, particularly the fruits and vegetables are not suitable for military use in the field on account of their bulk, and their inability to stand rough handling, and the extremes of temperature. For garrison use at isolated posts where there is no market there is no reasonable objection to them. The great value of evaporated fruits for field use has already been mentioned, and they can be so compressed by machinery as to obviate objections as to bulk.

The universal experience of military men testifies to the absolute necessity of tea or coffee. The latter is generally preferred, but the writer's experience points to tea as preferable in the long run. Now each is difficult to carry and protect from damage, and the experience of foreign services is to the effect that if they are compressed into small bulk a vast improvement is made as to facility of transportation and preservation. In our own service during the civil war, extract of coffee combined with milk and sugar was issued in lieu of coffee and sugar, but with what degree of satisfaction the writer is ignorant. At the present time these compressed teas and coffees are quite satisfactory in other services.

A discussion of condensed food among military men brings forcibly to light a false conception which all non-medical men are apt to foster. It is believed that foods can be so extracted and condensed that a teaspoonful will be of the same value as a pound of the crude food. Beef extract is often held up as the ideal concentrated food. It is forgotten that what a man wants is so many ounces of combustible material for its heat energy, and that beyond the concentration due to exclusion of water and indigestible portions nothing further is practicable. Indeed, it is not improbable that a few officers believe that it ought to be practicable to so condense foods that a soldier can carry in his watch fob enough for a week. When a ton of anthracite coal can be compressed into a water bucket, then and then only can foods be condensed to suit such beliefs.

It is well known that on rare occasions the soldier is called upon to perform the most laborious duties, under almost inconceivable exposures and hardships, and it can well be assumed that at such times his food should be liberal, to the point of extravagance. But unfortunately it is in just such circumstances that it is impossible to carry along the necessary appliances. It is purely then a matter of transportation, and the most concentrated foods are the only ones carried—bacon, hardtack and coffee—a scorbutic diet. Omitting thoughts of plum pudding and pound cake, he must even be deprived of things that in civilization are considered necessary—a baked potato would be a luxury. These are the circumstances in which the Erbswurst of the Germans and the dried pea soup of the English have found their greatest efficiency. It is understood that in the wilds of Africa and Asia, the English troops found the latter food of the greatest utility, on account of the impossibility of transporting anything bulky. As lack of transportation bars out potatoes first, it has been suggested by Lieut. W. C. Brown to issue the above pea soup or similar preparation, in lieu of potatoes. This will be done as there is probably ample authority by law, and it can be done without increasing the ration. It is believed that the matter is being giving very earnest consideration in our own army.

OBJECTIONS TO PREPARED FOODS.

The one great objection to prepared foods is the ease with which adulterations and other frauds can be perpetrated. Quality of foods can be easily determined if seen in the natural state, but let them be ground up and mixed with other things, and fraud may be difficult or impossible to detect. Good housekeepers will not buy with their eyes shut. The above objection applies far more forcibly to military foods where the consumer is never the purchaser, the cupidity and avariciousness of contractors is greatly stimulated. It is a strange fact that though contractors know that at times the lives of the soldiers and the safety of the nation may depend on the character of the army supplies, they will yet jeopardize the lives of thousands of men by fraudulently supplying inferior articles. The disasters and sufferings during the Crimean war were increased to a great extent by the poor grade of supplies. The military history of the United States furnishes a host of illustrations of operations and even campaigns being hampered or even made disastrous by faulty food. The German government escaped this dilemma by making its own Erbswurst, and if any government makes its soldiers' arms, ammunition, clothing and shelter, it can surely make his food. The objection is lessened when it is remembered that prepared foods are not intended as a sole diet, but merely to piece out the notoriously rough field diet, and the objection may entirely disappear by an efficient system of analysis and inspection. Above all this it may be argued that if easily transported prepared, cooked foods are to be a valuable innovation, it might be justifiable to run the risk of being occasionally furnished with inferior grades, a risk that we run in the majority of mercantile transactions.

During the civil war, it is stated that roasted and ground coffee was greatly objected to on account of adulteration, but it has also been stated that the adulteration was done openly, ground and roasted rye being purchased for the purpose. In regard to adulterated coffee the writer has seen somewhere a statement that the average soldier prefers coffee that is adulterated with chiccory.

Another objection to concentrated foods as a sole and continuous diet is the fact that they do not furnish enough bulk of food. Though they may contain the proper amounts of energy and alimentary principles they can never be used exclusively. But they are not intended to be so used except in emergencies and for short periods.

TRAVEL RATION.

When cooking is impracticable on account of traveling by cars, or rapid marches or for other reasons, a special cooked ration is issued. The items of this ration are stated in table 9.

TABLE IX.—TRAVEL RATION.

Meat	12 oz. canned beef, fresh or corned.	Total weight, 2 to 2½ lbs.
Bread . . .	18 oz. soft bread or 16 oz. hard bread	
Vegetables .	¼ to ½ lb. baked beans.	
Coffee . . .	21 cents a day for the purchase of liquid coffee en route.	

The above has the following composition (approximately):

		Protein.	Fats.	Carbohydrates.	Calories.
Grams .	Maximum	150	170	417	3,900
	Minimum	120	91	380	2,900
Mean		135	132	400	3,400

This ration is insufficient for active men, being equivalent to the food of men of sedentary habits. The protein is the only ingredient in nearly the proper amount, and this arises from the meats and beans. As this ration is intended for short periods of inactivity (on cars, etc.) it might be said that the insufficiency is more apparent than real, but as men traveling usually develop enormous appetites they may need more than when in garrison. Nevertheless, it might be improved by the addition of prepared soups as in the case of the field ration.

A further defect of this ration is the inability of a man to carry enough for several days should military necessity compel him to be detached from the main command, carrying dispatches, scouting, etc. On such occasions he must learn to do as the Indian does,—twice a day take a drink of water and tighten his belt.

COMMUTATION OF RATION.

When small parties of soldiers are detached and it is impracticable to furnish them either cooked or uncooked rations and they are so situated that they can buy their meals, they are paid a certain sum in lieu of food. The ration cost about 14 or 15 cents (approximately) but when the soldier is on leave he is allowed 25 cents a day, when on detached duty 30 cents (non-commissioned officer 40 cents) and when traveling $1.50 a day.

TABLE X.—COMPARISON OF FOODS OF SOLDIER WITH VARIOUS OTHER DIETARIES.

	Grams.				Grains.	
	Protein.	Fats.	Carbohydrates.	Calories.	Nitrogen.	Carbon.
German soldier (peace footing)	114	39	480	2800	277	4443
Fully fed tailors, England	131	39	525	3055	318	4862
Travel ration, U. S	135	132	400	3400	328	5194
Machinist (Connecticut)	105	147	399	3435	255	5145
Factory operatives (Massachusetts)	111	150	522	4000	277	6048
Factory operatives (French Canadians) Mass .	118	204	549	4630	287	6901
German ration, war (extraordinary)	157	285	331	4650	382	6750
U. S. garrison ration (including canteen) . . .	152	180	570	4621	370	6805
Same (including beer)	155	180	633	4907	377	7446
U. S. field ration (average)	85	280	500	5000	206	7247
Machinist (Massachusetts)	182	254	617	5640	442	8423
Teamsters, hard work, Massachusetts	254	363	826	7805	617	9950

The U. S. rations would be slightly increased by including the amounts of nutriment in the articles of table 5.

Table 10 is prepared to show at a glance how the various rations discussed compare with the food of civilians. They are tabulated with various dietaries that have been published by Atwater. It is thus shown, that as far as the total energy is concerned the various rations compare rather favorably with the dietaries of various laborers in the United States. Only one dietary of foreign laborers is given for they are all less than those of American laborers of the same grade—the foreign workman, according to Atwater, being as much underfed as some American workmen are overfed. The field ration would be reduced in carbohydrates if potatoes could not be carried. Taking the largest dietary on the list as unity,—that is, the food of teamsters in Massachusetts doing hard work,—the energy of the various rations would be as follows: Field ration $\frac{10}{15}$; garrison ration, $\frac{9}{15}$; travel ration $\frac{7}{15}$.

The rations of foreign armies approximate to the usual food of the people, which as we have just seen is less than that of Americans; for this reason it is unfair to compare the U. S. ration with that of foreign armies, unfair to the former, which by the contrast appears more liberal than it is, unfair to the latter which similarly is apparently illiberal or actually deficient.

TABLE XI.—ESTIMATED PROPORTIONS OF ORDINARY DIETARIES.

	Protein.	Fat.	Carbo-hydrates.	Salts.
Playfair (moderate exercise and soldiers in peace)	100	33	443	17
Moleschott	100	65	315	23
Pettenkofer & Voit	100	87	258	22
U. S. travel ration	100	98	296	21
Ranke	100	100	240	25
U. S. garrison ration	*100*	*117*	*100*	*21*
U. S. field ration	100	329	588	21

The larger percentage of fats over protein in the U. S. rations in table 11 corresponds to the increased proportion of fats over protein found in all American dietaries according to Atwater, a still further evidence of the unfairness of comparing the U. S. ration with that of foreign soldiers.

SPECIMEN DIETARIES.

There are given in tables 12 and 13, a week's bill of fare taken at random and furnished by two company commanders, one at Fort Assinniboine, Montana, and the other at a hot southern post. These two are in the strongest contrast, the first so liberal, and the latter so bare, that they exemplify in the most fortunate way some of the remarks previously made as to the conditions of service varying the bill of fare. The company at Fort Assiniboine possessed an excellent cook and a large company fund, received nearly $50 a month from the Post Exchange, at the time chosen had vegetables from a fairly good garden, and could purchase extras fairly reasonably from neighboring towns and even St. Paul, but none of the conditions were as good as at other posts with excellent gardens, large receipts from the Exchange and convenient to good markets. The other company had no fund, no receipts from Post Exchange, no garden, no markets even if they had money to buy, and the result shows what the ration itself can do, supplemented as it was by $\frac{3}{4}$ to 1 pound potatoes daily per man purchased from meagre savings. Its commander also states as one reason for small "savings" that many of the soldiers are not much more than boys, and that they discover eating abilities surpassed by none except Indians. He is thoroughly alive to the interests of his men and gives much thought to the ration, and when favorably situated the company fared excellently. The bill of fare can therefore be correctly assumed to be the best that could have been done.

TABLE XII.

A company's dietary at Fort Assinniboine, Montana (Capt. Alfred Reynolds' Company).

December 1, 1891.

(Gravy always served with meats, and sauce with puddings.)

Breakfast: Beef stew, fried potatoes, corn bread, syrup, bread, butter, coffee.

Dinner: Meat pie, mash potatoes, turnips, cabbage, pickled pork, bread, coffee.

Supper: Beefsteak with onions, squash pie, bread and coffee.

December 2, 1891.

Breakfast: Roast beef, fried potatoes, bread, butter, coffee.

Dinner: Pea soup, roast beef, baked potatoes, stewed onions, cauliflower, tapioca pudding, bread and coffee.

Supper: Meat stew, fried carrots, apple pie, bread, coffee.

December 3, 1891.

Breakfast: Oatmeal, milk, meat hash, bread, coffee.

Dinner: Sauerkraut, pickled pork, mashed potatoes, pickbeets, rice pudding, bread and coffee.

Supper: Fried sausage meat, fried potatoes, green corn, blanc mange pudding, bread and coffee.

December 4, 1891.

Breakfast: Beefsteak with onions, fried potatoes, bread, coffee.

Dinner: Roast beef, mashed potatoes, stewed onions, pickled beets, plum pudding, bread, coffee.

Supper: Fried liver and bacon, fried carrots, squash pie, bread, coffee.

December 5, 1891.

Breakfast: Beefsteak, fried potatoes, bread, butter, coffee.

Dinner: Pork and beans, peach pie, bread, coffee.

Supper: Cold beef, corn bread, syrup, apple sauce, bread, coffee.

December 6, 1891.

Breakfast: Meat hash, oatmeal, milk, bread, butter, coffee.

Dinner: Vegetable soup, mashed potatoes, roast beef, pickles, tapioca pudding, bread, coffee.

Supper: Beef stew, green apple pie, bread, butter, coffee.

December 7, 1891.

Breakfast: Roast beef, baked potatoes, hot rolls, syrup, bread, butter, coffee.

Dinner: Sauerkraut, pickled pork, mashed potatoes, roast beef, bread, coffee.

Supper: Meat pie, rice pudding, bread, butter, coffee.

December 25, 1891, Christmas.

Breakfast: Meat hash, oatmeal, milk, hot rolls, bread, butter, coffee.

Dinner: Roast turkey, roast beef, green corn, French peas, ham, mashed potatoes, pickles, cranberry sauce, mince pie, jelly cake, sponge cake, bread, butter, coffee, almonds and filberts.

Supper: Oysters, cold ham, cold beef, apple sauce, assorted cakes, green apple pie, bread, butter, tea.

TABLE XIII.

A company dietary at a hot southern post.

(Gravy always served with meats, and sauce with puddings.)

April 1, 1892.

Breakfast: Beef hash, (with onions and potatoes) bread, coffee.

Dinner: Rice and tomato soup, roast beef, roasted potatoes, bread.

Supper: Beef, (same as dinner) bread, coffee.

April 2, 1892.

Breakfast: Irish stew, bread, coffee.

Dinner: Pea soup (with toasted bread), roast beef, boiled potatoes, bread.
Supper: Beef, pancakes, syrup, bread, coffee.

April 3, 1892.

Breakfast: Meat hash (with potatoes and onions) bread and coffee.
Dinner: Roast beef, mashed potatoes, plum pudding, bread and coffee.
Supper: Fried liver and bacon, bread and coffee.

April 4, 1892.

Breakfast: Beef hash, bread and coffee.
Dinner: Baked fresh pork, baked beans, bread and coffee.
Supper: Beefsteak, fried potatoes, bread and coffee.

April 5, 1892.

Breakfast: Irish stew, bread and coffee.
Dinner: Rice and tomato soup, roast beef, boiled potatoes, bread.
Supper: Beef, fried potatoes, bread and coffee.

April 6, 1892.

Breakfast: Beef hash, bread and coffee.
Dinner: Rice and tomato soup, roast beef, boiled potatoes, spiced bread dressing, bread.
Supper: Meat pot-pie, bread and coffee.

April 7, 1892.

Breakfast: Fried pork, fried potatoes, bread and coffee.
Dinner: Pea soup, with toasted bread, roast beef, boiled potatoes, bread.
Supper: Beef, fried potatoes, bread, coffee.

In view of the above bills of fare, and of all that has been said about the ration, it must be stated that it is a notorious fact that when sensational complaints from soldiers are published in the newspapers, it too often happens that when sifted down, they are shown to come from men who are inclined to be vicious, and who before enlistment have been accustomed to far worse fare, but who think that to complain is sure evidence of personal superiority. These cases are apt to dampen the ardor of officers, who with rare exceptions, are thoroughly interested in the soldier's welfare.

For the major part of the data of this paper the writer is indebted to the courtesy of the officers serving at Fort Assinniboine, Montana, who have with painstaking care weighed and determined the foods used in their respective companies and supplied all data at their command.

ERBSWURST.

Of the legion of prepared foods that have been used for military purposes the only ones that have given much satisfaction, and to which there are few objections, are those made with powdered peas as a basis. In some armies these are now always sent into the field with troops to be used when other foods cannot be supplied. As Erbswurst is the pioneer of this class, and has been frequently referred to, a few words as to what it is may not be out of place, though they may repeat former reports to this Section. Captain Henry G. Sharpe, C. S., U. S. Army, who has devoted much time and study to this subject both at home and abroad, has very kindly furnished the following information from his reports.

"Erbswurst is a combination of pea meal and other articles, invented by a German cook named Grünberg, whose secret consisted in his method of preserving the legumine from the decay to which it is so prone. The German Government purchased the secret for $25,000. It was first used on a large scale in the Franco-Prussian war by the II army commanded by Prince Frederic Charles, who reported its great value to the war ministry July 16, 1870. The food was composed of pea meal, fat and bacon, and an extensive factory for making it was established at, Berlin, under the supervision of Army Intendant Englehard. The factory commenced work on August 8 and in a few days furnished the first 100.000 pea sausages which under the name of "Erbswurst" became so widely known. This article of food met with such general approval that for a long time the factory had to supply the whole army with it. The factory ultimately extended its business to making other kinds of meat preserves and altogether sent some 40,000,000 rations to the field army. Other factories were established at Frankfort-on-the-Main, and Mainz.

This description of food had the advantage for the commissariat in being lighter for transport, and for the troops, especially for those on outpost duty, in being more easily prepared for consumption. The unavoidable sameness of the ration, was successfully compensated for by the large stores of wine found in the neighborhood of Paris, and by the occasional issue of an extra ration of brandy."

Parke's Hygiene states that when it was used too constantly not only did the men dislike it but it was liable to produce flatulence and diarrhœa. A soldier who has lately returned from a visit to Germany informs the writer that the soldiers in private conversation still speak of it in the highest terms. On account of certain seasoning ingredients in Erbswurst the English soldiers do not like it, though they are very fond of their similar preparation of pea soup.

TABLE XIV.—COMPOSITION OF SOME PREPARED MILITARY FOODS.

	Water.	Protein.	Fat.	Carbo-hydrates.	Wood-fiber.	Ash.	Authority.
Erbswurst	12.09	31.18	3.08	17.50	. .	6.15	Blythe.
" as first used	. .	16.00	35.00	27.00	. .	. .	Parkes.
" 1887	. .	15.70	23.00	. .	. .	. .	"
Dried pea soup (1)	7.58	16.93	8.98	53.44	1.34	11.73	Konig.
" " " (2)	8.08	15.81	21.11	36.78	1.69	13.53	"
Kopf's " " (used by the English army.)	4.78	21.09	17.25	46.45	4.40	6.03	S. P. Sharpless (Boston).

In table 14 are arranged some analyses of these pea-meal mixed foods. The English pea-soup appears to be drier than the others, and as the actual analysis above shows it to be so, it will probably keep better than the others. The percentage of fat though not great enough for American stomachs is far more than the first specimen of Erbswurst. If it were more fatty it would not keep as well as it does. Several American firms make dried pea soups and it is regretted that analyses of their products are not available for comparison.

Medical Education of Women in Russia.—The establishment in Russia of a separate school of medicine for women which many people had hoped would soon be an accomplished fact has been postponed probably for an indefinite period. It is stated that the project has been set aside through the influence of the Minister of religion, who views the higher education of women in anything but a favorable light, being persuaded that the study of medicine leads to materialism and nihilism.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The recent Convention of representatives of the Southern Medical Colleges, held in Louisville, and the wide spread interest in this subject makes it pertinent at this time for THE JOURNAL to publish the proceedings of the meeting of The Association of American Medical Colleges, held in Detroit June 8, including the Constitution of that organization.

CONSTITUTION.

ARTICLE I.

This Association shall be known as the ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

ARTICLE II.

§ 1. Colleges adopting and observing the rules of this Association, as herein provided, shall be eligible to membership. Each college shall be entitled to one representative at all the meetings of the Association.

§ 2. Colleges desiring membership in this Association, shall make written application to the Secretary, officially signed, and pay to the Treasurer of this Association the sum of five dollars ($5), annually, in advance.

ARTICLE III.

§ 1. Members of this Association shall require of all matriculates an English composition, in the handwriting of the applicant, of not less than two hundred words, an examination by a Committee of the Faculty, or other lawfully constituted Board of Examiners, in higher arithemetic, algebra. elementary physics and Latin prose.

§ 2. Graduates or matriculates of reputable colleges or high schools of the first grade, or normal schools established by State authority, or those who may have successfully passed the entrance examination provided by the statutes of the State of New York, may be exempted from the requirements enumerated in Section 1.

§ 3. Students conditioned in one or more of the branches enumerated as requirements for matriculation, shall have time until the beginning of the second year to make up such deficiencies; provided, however, that students who fail in any of the required branches in this second examination shall not be admitted to a second course.

§ 4. Colleges granting final examination on elementary subjects to junior students, shall not issue certificates of such final examination, nor shall any member of this Association confer the degree of Doctor of Medicine upon any person who has not been first examined upon all the branches of the curriculum by the faculty of the college granting the degree.

§ 5. Candidates for the degree of Doctor of Medicine shall have attended three courses of graded instruction of not less than six months each, in three separate years.

§ 6. Students who have matriculated in any regular college prior to July 1, 1892, shall be exempted from these requirements.

ARTICLE IV.

§ 1. The officers of this Association shall be a President, Senior and Junior Vice-Presidents, Secretary and Treasurer, and a Judicial Council of seven members: all of whom shall be elected annually by ballot and serve until the election of their successors.

§ 2. The President, or one of the Vice-Presidents in his absence, shall preside at all the meetings and perform such duties as parliamentary usage in deliberative assemblies and the By-Laws of this Association may require. Of the seven members constituting the Judicial Council, the three whose names appear first on the list of those first elected shall serve three years. Of the remaining four, the two first named shall serve two years, and the two last named shall serve for one year. Vacancies by expiration of term to be filled at the annual election of officers. Vacancies by death or resignation may, if business of importance arise, be filled by the surviving members in the interval between the annual meetings of the Association.

§ 3. The Secretary and Treasurer shall record the proceedings of the meetings, conduct the correspondence, receive dues and assessments from members, disburse the funds of the Association as provided by resolution, issue certificates of membership, and perform such other duties as the By-Laws may require.

§ 4. The Judicial Council shall investigate and determine all questions of violation of the rules and regulations of this Association, and all matters of dispute between the members of this Association. All charges or complaints shall be preferred formally in writing, and referred to the Council. The Council shall make written report at the next ensuing session of the Association, upon all matters received for adjudication.

ARTICLE V.

§ 1. The stated meetings of this Association shall occur annually on the day next succeeding that designated for the annual assembling of the American Medical Association.

§ 2. A majority of the members shall constitute a quorum.

ARTICLE VI.

This Constitution shall not be altered or amended, except by written notice to all the members, at least thirty days previous to a stated meeting, and by a vote of two-thirds of all the delegates present at such meeting.

The following papers were read and discussed at the last annual session:

TO WHAT EXTENT SHOULD CLINICAL INSTRUCTION BE AFFORDED STUDENTS OF MEDICINE IN REGULAR COURSE.

BY N. S. DAVIS, M.D., LL.D.,

DEAN OF NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, (CHICAGO MEDICAL COLLEGE,) CHICAGO, ILL.

The subject of Clinical Instruction, as a part of the regular medical training required for the student during his attendance on his college courses, is one of much importance, and should receive more attention than has been hitherto given it. That the student should receive sufficient true clinical training to make him familiar with the means and methods of the examination of patients, the diagnostic symptoms of diseases, and the application of remedies, before being authorized to commence the practice of medicine and surgery, is generally admitted.

Whether such clinical training should take place while the student is actively engaged in prosecuting his medical college studies, or should be assigned to *one or two years after* he has completed the college curriculum, is a question concerning which much might be said. If the student is required to have a good general education and a fair degree of mental discipline before he commences the study of medicine, four years is certainly as long a period as three-fourths of the students can afford to spend in strictly professional study before they commence practice. Admitting this to be be true, I think both reason and experience show that the first of the four years should be devoted exclusively to the study of anatomy, physiology, chemistry, and materia medica with abundant practical work in the anatomical, histological, physiological and chemical laboratories with no clinics. But having thus gained at least an outline knowledge of the human body and its functions in health, and some knowledge of medicines, the student is fairly prepared to profit by one or two hours of direct clinical instruction each day during his second, third and fourth annual college courses. Such clinical instruction, however, should not be given to large classes in college and hospital amphitheatres or crowded wards, as is too generally done; but it should be so graded as to permit of adjustment to the need of each year's class, corresponding with the grading of the several branches of the curriculum, For example, the first year of clinical instruction. which would correspond with the second year of medical study, should aim to make the student personally familiar with the physiogonomy and symptomatology of diseases, and with the use of all instruments and appliances for accuracy of examination and diagnosis, both medical and surgical. The second clinical year should be chiefly occupied in the study of the actual pathological processes taking place in the different forms of disease and their relation to the symptoms, including personal examinations, chemical and microscopic, of the secretions and excretions in the several stages of progress of disease, as well as the tissue changes to be found after death. With these studies, the objects to be accomplished for counteracting the morbid processes, correcting the secretions, and preventing permanent or fatal tissue changes, should be clearly indicated. Having thus become clinically familiar with the symptoms, diagnosis and pathology of diseases and the indications desirable to fulfill in their management, the third clinical year should be devoted directly to the study of methods and means of treatment, preventive, hygienic, therapeutic and surgical.

The advantages to be gained by such grading of clinical studies as I have just indicated must be obvious to both the student and the clinical teacher: 1. By giving to each year of clinical study, limited and definite objects, the accomplishment of which makes his next year's work easier and more thorough, you not only make the student's practical knowledge more systematic and comprehensive, but you add much to his mental discipline and accuracy of observation. 2. Such a system necessarily limits the number of students in any one clinical class, and in the same ratio increases the opportunities and value of individual training, which is the most essential feature of all true clinical study. The dispensaries and hospitals of our larger cities in which the medical schools are chiefly located, contain an abundance of clinical material, that needs only judicious arrangement and faithful attention to secure both the most complete clinical instruction and the most skilful service for the sick. But as the subject is to be before you for further discussion, I will not occupy your time with details at present. The principle or system of grading the clinical instruction of students during their consecutive courses of medical college attendance, will be found no less important and advantageous than is the proper grading of the various branches of medicine contained in the college curriculum.

THE KIND AND AMOUNT OF LABORATORY WORK WHICH SHOULD BE REQUIRED IN OUR MEDICAL SCHOOLS.

BY VICTOR C. VAUGHAN, A.M., M.D.,
DEAN MEDICAL DEPARTMENT UNIVERSITY OF MICHIGAN.

Mr. President and Gentlemen:—It will not be necessary for me to take any time in giving the arguments in favor of teaching medical students by the laboratory method many of the sciences which must enter into the curriculum of study. I will take it for granted that all reputable teachers of medicine understand that analytical chemistry, practical anatomy, bacteriology, histology, physiology, analysis of urine, pathology, etc., must be taught in the laboratory in part at least, if taught at all. How can you expect a practitioner to tell whether a given bit of tissue is from a malignant growth or not, when he has never seen a cancer cell? How could he be trusted with such an examination when he has never used a microscope, cut a section, or made a microscopical mount? How can the young practitioner diagnositicate tuberculosis in its early stages, when he has had no practical experience in staining germs and when he would not recognize the bacillus tuberculosis should it be placed before him? How can he detect tyrosine or leucine in the urine, when he does not know a crystal from an air-bubble? How can he recognize structural disease of the kidney when he does not know a cast from an epithelial cell? These questions suggest their own answers. It might be said, possibly, that many of the older men now practicing medicine and doing so satisfactorily, and, indeed, with credit to themselves and the profession, never had laboratory instruction in these branches. This is true, but these men have been compelled to take up these new studies and methods for themselves. Besides, more is expected in these directions from the recent graduate than from the older man. Medical schools should always give the best and the most recent information, and every fact which may possibly aid in the diagnosis or treatment of disease should be made known to the student. The student has the right to expect and to demand this of teachers, and all intelligent and conscientious students will do so. The time once was when the teacher was a model from which his students copied. The student measured his own success by the extent to which he imitated his master. Now, that teacher who does not give his student opportunities for independent and original work in science is to a large extent a failure. Just as in the general progress of the race, one generation should be wiser than the preceding, so every class should contain one or more students who will at maturity be wiser than the best teacher.

I will presume that all of us here agree that laboratory instruction should be given in medical schools, and with this presumption I will now turn to the question of what, in kind and amount, should this laboratory teaching consist.

We will suppose that the student has had a full course in a good high school or an equivalent of this. (The best medical colleges are not satisfied with a less requirement for admission.) The student is able to use the English language correctly, and he has a good drill in mathematics, including arithmetic, algebra and plain geometry. He has had, we will suppose, fair instruction in systematic botany zoology. He is acquainted with the general classification of plants and animals, and knows the meaning of the general terms employed in the natural sciences. He has some knowledge of physics, knows what is meant by the conservation of energy, and understands the fundamental principles underlying our knowledge of heat, light and electricity. I am aware of the fact that many medical schools admit students who have not these qualifications, but such a school does not comply with the rules of this Association, and I am to discuss the question of laboratory teaching in those colleges which belong to this Association and which live up to the requirements to which we have mutually and voluntarily pledged ourselves.

In the first place it will be convenient to specify what I mean when I speak of the number of hours, days or weeks given to a subject. We will suppose that there are five teaching days in the week, that the forenoon of these days are devoted to class instruction given in the form of lectures and recitations, and that four hours of each afternoon are spent in laboratory work. In certain schools this order may be reversed or some of the laboratory instructions, practical anatomy. for instance, may be given in the evening. With the understanding then that four hours shall constitute a day of laboratory work, I will outline such a course as I conceive to be essential to the student.

The courses of laboratory work which should be embraced in the curriculum are, 1. Analytical chemistry; 2. Practical anatomy; 3. Bacteriology; 4. Physiological chemistry, including the analysis of urine; 5. Histology; 6. Physiology, and 7. Pathology.

1. *Analytical Chemistry.*—The medical student should become acquainted with the physical properties, solubilities and general reactions of the salts of silver, lead, mercury, copper, arsenic, antimony, bismuth, iron, zinc, cobalt, nickle, barium, calcium, potassium, sodium, lithium and ammonium, which are employed in medicine. This knowledge cannot be properly acquired from a study of books alone.

The student must see these compounds, must dissolve them, and must ascertain their incompatibles by precipitating the bases and acids with various reagents. To do this properly, experience has shown that a course of twelve weeks is required. If a shorter time is given to this branch the work must be done superficially and the knowledge is but imperfectly acquired.

2. *Practical Anatomy.*—Each student should first have a thorough drill in osteology. With the bones before him he must study their size and shape, the nature of their articulations, the points of origin and insertion of ligaments, tendons and muscles and the location of foramina. Then he should carefully, slowly, intelligently, under the eye of a demonstrator, dissect every part of the body, and in doing so he must not only study position, size and physiological office of each muscle, but of the viscera, the blood vessels and nerves. My observation has led me to believe that too often dissection means nothing more than a study of myology.

If the student is to become a surgeon it is quite as important that he should know what blood vessels and nerves are to be severed in a given operation as to know what muscles he must traverse with his knife. If he becomes a general practitioner he will need to recall the anatomy of the viscera more frequently than that of the muscles. Every medical school should also offer a course in surgical anatomy. Of course the professor of anatomy dissects before the class and gives especial attention to the hernial region and other parts of the body upon which surgical operations are often necessary; but this is not enough. Such knowledge as this is what our legal friends would designate as hearsay. The positive knowledge can be gained only by the student using the knife himself. Knowledge thus gained becomes a part of himself and arms him with a consciousness of his own resources when he is called upon to do the operation for the first time upon the living body.

The osteology should be taught during the first part of the first year. Then the courses in dissection may follow, while that in surgical anatomy is of most benefit when given later in the course and at times when the student is in attendance upon the surgical clinics.

I think that twenty week's time is none too long for the osteology and the dissections, while four weeks more might be given to the operative work.

Bacteriology.—Practical bacteriology is taught as an under-graduate course in only a very few medical schools, but this is not as it should be. The germ theory is now, and has been for some years, much more than a theory, and the causal relation of certain bacteria to certain infectious diseases has been demonstrated with all the certainty of direct scientific experimentation. We all teach that tuberculosis, diphtheria, typhoid fever, etc., are caused by bacteria; that the detection of these bacteria in many cases offers the only early means of positive diagnosis, and yet only a very few colleges afford any demonstrative instruction in this branch. Every sanitarian speaks of the spread of typhoid fever by contaminated drinking-water, and still of the hundreds of medical students graduated in this country within the past three months only a very small number have any conception of the method or procedure necessary to detect the typhoid germ. The surgeon dwells upón the fact that the pyogenic germs give rise to suppuration, and seldom demonstrates these organisms to his students. Great stress is placed upon the necessity of examining the sputum in suspected tuberculosis, and yet hundreds of graduates of the present year would not know how to stain the germ nor would they recognize it were it stained and placed before them. We teach that in many cases the recognition of Loffler bacillus is the only sure means of the postive recognition of diphtheria, and yet how many teachers make their students acquainted with the practical means of recognizing this organism. There is just cause of complaint on this point. Schools which neglect this branch of instruction are not giving their graduates the proper equipment.

A course of bacteriology embraces the methods of the preparation of the various culture media, of the processes of obtaining pure cultures, of the nature of growths on the various media, of the effect of pathogenic germs on animals, and of the detection and identification of the germs in tissue, in sputa, in drinking-water, and elsewhere. Such a course should begin with the study of the non-pathogenic and proceed to that of the pathogenic bacteria. I have tried the teaching of bacteriology in all the classes of a four year's course, and find that I can teach this subject to the students of the first year as satisfactorily as to those of the fourth year. Indeed, there is an advantage in having this instruction given early in the course. The student who has studied the diphtheria bacillus, or that of a tuberculosis, in the laboratory, and knows the manner of their growth, and has watched their effects upon animals, will listen to his clinical lectures upon these diseases with greater interest and more intelligence than the student whose only knowledge of these organisms is confined to that of their names with some imperfectly understood text-book or lecture description of them. Ten or twelve weeks should be given to the course.

4. *Physiological Chemiscry.*—This course should

embrace a chemical study of the most important secretions of the body. The test for hydrochloric and lactic acids in vomited matters, the recognition of the digestive ferments and the method of the determination of the activity of the same, and an analysis of the urine and bile, should be included. The student should be made perfectly familiar with the constituents of normal urine. In most medical schools the analysis of urine is limited to the detection of sugar, albumen and bile. Students with such training often mistake epithelial scales for casts, and pronounce every reducing substance found in the urine, sugar. I meet with mistakes of this kind frequently, and have known more than one physician to lose the confidence and respect of the patient and his friends by mistaking an epithelial scale for a cast. A physician is often pardoned for overlooking a serious trouble when it exists, but it is a sad mistake to tell some man that he has an incurable form of Bright's disease or diabetes, when nothing of the kind exists. The patient gets over his fright after a while, but he is not likely to forgive the doctor who has made the blunder.

I believe that analysis of urine should form a part of clinical instruction, but this work should be preceded by a scientific study of normal urine and the scientific methods of estimating the most important normal and abnormal constituents of the urine. The course in physiological chemistry will occupy not less than ten or twelve weeks.

5. *Histology.*—The medical man certainly must be able to recognize the various tissues of the body by their microscopical appearance. He must be acquainted with the methods of hardening specimens, making sections, mounting and staining the same. This knowledge can not be acquired from books or in the lecture room. Laboratory instruction in this branch is a necessity. This knowledge can be gained in a course of six weeks.

6. *Physiology.*—All medical teachers admit the necessity of practical dissection in acquiring anatomical knowledge, while but few schools give practical courses in physiology. Notwithstanding this, it is certainly true that the medical man needs to employ his physiological knowledge quite as often as he does his anatomical learning. When such instruction is properly given we will have much more intelligence displayed in the practice of medicine. One needs to know the anatomy of the heart in order to detect valvular diseases of that organ, but the number of functional diseases of the heart which one is called upon to treat is certainly greater than that of structural diseases of the same organ, and yet the student in most of our schools has no practical instruction in the innervation of the circulating system. How many of us were able from knowledge gained in our undergraduate course to intelligently apply electricity to any part of the body, to mark out anæsthetic areas which would result from injury to or disease of any nerve, to intelligently interpret the reaction obtained in testing the knee reflex, to properly ascertain the degree of sensation in any muscle, to explain the relation between injury to the floor of the fourth ventricle and the glycogenic function of the liver: or in short, did we have any positive physiological knowledge other than a general idea of the processes of digestion, absorption and elimination? Do we not feel the want of this training in the work of every day? Should we not see to it that our students have this instruction? A six weeks' course in laboratory [illegible] will in my opinion be of great service.

[illegible]—The necessity of practical instruction in this branch will be admitted by all. Such a course should embrace both gross and minute pathology. The bungling way in which post-mortem examinations are often performed, and the little information which the medical man usually gets from such an examination, afford abundant evidence of the fact that gross pathology is too much neglected in our schools. Without microscopical pathology the determination of the nature of many growths is quite impossible. Let us give six weeks to the deadroom and laboratory courses in pathology.

To sum up I would say that the following laboratory courses are essential:

1. Analytical chemistry, 12 weeks.
2. Pracitical and surgical anatomy, 24 weeks.
3. Bacteriology, 10 to 12 weeks.
4. Physiological chemisty, 10 to 12 weeks.
5. Histology, 6 weeks.
6. Physiology, 6 weeks.
7. Pathology, 6 weeks.

This makes a minimum of 74 weeks. The greater part of this work should precede clinical instruction. Besides the above mentioned courses, therapeutics, including electro-theraputics, is now being taught in some schools largely by laboratory methods, and this tendency will grow.

Laboratory methods will soon largely modify clinical teaching. Amphitheatre clinics are giving way to bed-side and section instruction. Laparotomies and other capital operations are now made by the students in some of our schools on dogs. The surgeon as well as the chemist has his laboratory. The student delivers the alcohol baby from the rubber mother before he is permitted to enter the lying-in room. It is no longer necessary to spoil a hatful of human eyes before one becomes a skillful ophthalmologist.

DISCUSSION OF DR. VAUGHAN'S PAPER.

BY BAYARD HOLMES, B.S., M.D.,
SECRETARY COLLEGE OF PHYSICIANS AND SURGEONS, CHICAGO, ILL.

Mr. President and Gentlemen of the Association of Medical Colleges:—The paper of Dr. Vaughan, which has interested us so much, suggests great changes in medical education. During the past year my attention has been called to some of the details of laboratory work which must be faced by every one of you. Allow me to very briefly speak of some of the results of my thoughts and studies.

Laboratory rooms must be light and roomy. Forty square feet of floor is the least amount which will accommodate a single student, and then only in the chemical laboratory. In all other laboratories at least sixty square feet of floor space, not including aisles, must be allowed each student. In the chemical laboratory students' desks may be placed twenty feet from the windows; in laboratories in which microscopes are to be used, fourteen feet is a maximum.

The ordinary medical class in the larger institutions ranges from one hundred down to thirty, and therefore the laboratory room should be, if lighted on both sides, not less than fifty by forty feet, and it may be lengthened but not widened. At the institution which I represent, our laboratory rooms were last winter twenty-five feet by sixty feet, lighted on one side and both ends; our largest class numbered ninety-four, and it was necessary, therefore, except in chemistry and bacteriology, to divide the class into two sections and then crowd them. Our new laboratories are attached directly to the old ones and are the same width (twenty-five feet), making each laboratory a room 160 feet long, lighted on one side and capable of accommodating eight students to each ten feet of length. This gives us, besides the necessary reduction for aisles and preparation rooms, accommodations for 120 students in each laboratory. This seems like a large class for laboratory work. So it is. And yet the fact that our laboratory teachers are practicing physicians makes it necessary to economize their time. They are unable to give the work the whole day, or every day in the week, and we believe, supposing an unlimited supply, that brick, stone, glass and iron are cheaper than men. This large laboratory class necessitates great and even elaborate system and unusually efficient teachers. Every man who can conduct a laboratory exercise creditably with a class of ten, will not be able to hold and instruct a class of seventy-five.

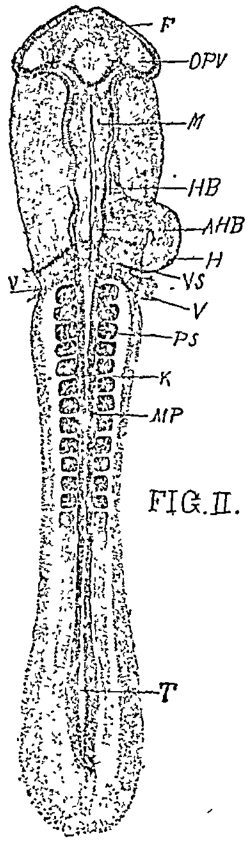


FIG. II.

The Normal Embryo.

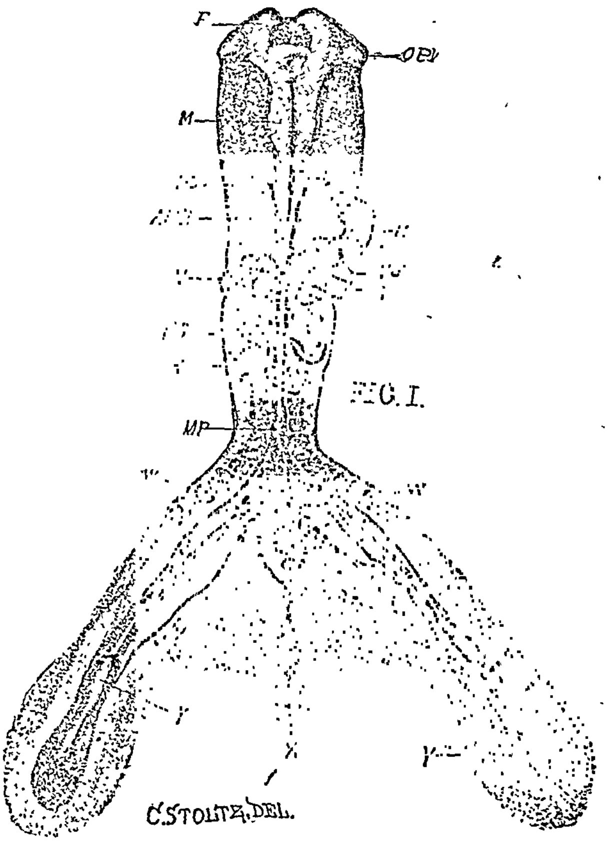


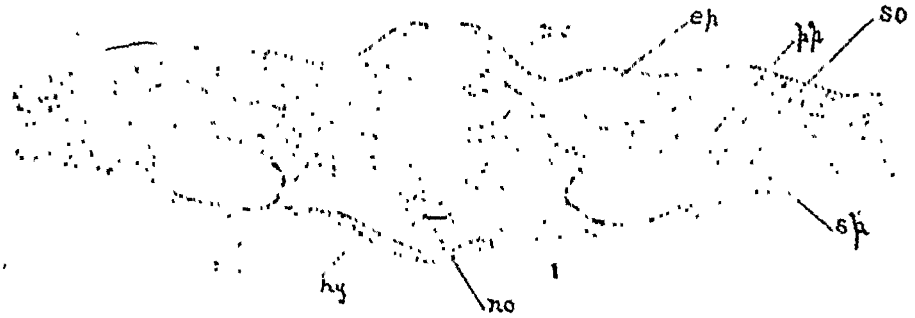
FIG. I.

The Fissioned Embryo.

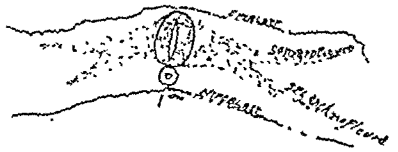
The order necessary requires such an arrangement of desks as will allow two sets of men to use each laboratory room. Our desks in the microscopical room have a flat surface $1\frac{1}{2}$ by $3\frac{1}{2}$ feet, of oiled white wood. There is a knee space two feet nearly, and two cupboards on the right, each locking with a Yale lock, and each eighteen inches square and two feet deep, in which are suitable drawers and shelves. The desks are built in pairs and the sides are stained white wood. Stools are provided that are about two inches higher than the ordinary chair and can be placed in the knee space when not in use.

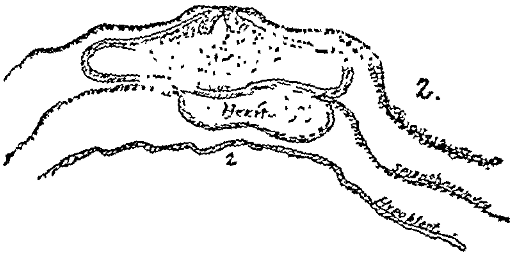
These details may be tiresome, but success in the laboratory work depends on the care with which these details are considered. One of the most important matters is the system of bookkeeping employed by the curator in keeping track of the supplies. We lost at least two thousand dollars unnecessarily from the neglect of this business-like forethought. Last term we started out with a single man for curator. The demonstrators furnished lists of material required for each of the nine laboratory courses which were conducted last term. A sufficient number of outfits were made up by the curator a month before the term opened. On an appointed hour the students selected their desks in the laboratory in the order in which they purchased their tickets. They went one by one to the store-room as their places were assigned and received each his outfit. In the outfit were two printed lists of the material contained. Each student compared his invoice with the outfit, signed the receipt on one invoice, left it with the curator, and after locking the desk put his key in his pocket and went out in an orderly manner. These receipted invoices were entered in a book which had two columns opposite each student's name, one for debits, one for credits, and a place for the student to sign his name on receiving his balance and closing the account. Students are encouraged to keep their outfits, as they are useful in promoting after study. They are paid for at cost, or a little above cost, out of a deposit fund placed with the treasurer for that purpose. By such a system the laboratories may be made a source of income, and not an expense to the college.

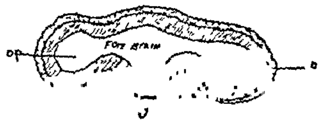
The equipment and supplies are purchased for the most part in Europe, on account of the enormous reduction which the law allows educational institutions in the rebate in imposts. It is necessary to put in all orders for European goods at least as early as March 1. In our laboratories we are using the Leitz and the Bausch and Lomb microscopes. We have now a sufficient number to give each man an instrument. We urge students to provide themselves with microscopes, and many of them do, especially the second year.



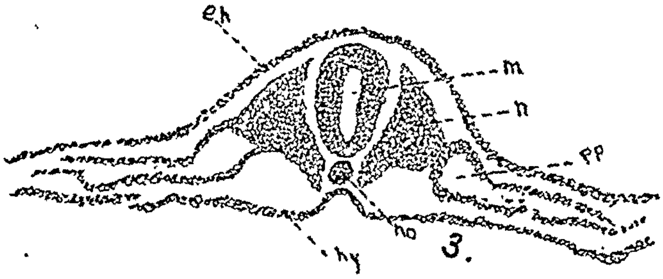
If I may be allowed the time, I should like to show you some drawings made last winter by second year men in the College of Physicians and Surgeons, in the laboratory of Dr. A. P. Ohlmacher, Professor of Embryology and Biology. These 250 or more drawings represent the work of *every one* of the class of seventy-two students, and they were a part of the final examinations on that branch. Under the directions of Prof. Ohlmacher and his two assistants, Mr. Stolts and Mr. Osincup, selected out of the class, each student opened his incubated egg, sketched and removed his embryo, fixed, stained, imbedded, cut and mounted it. He made drawings representing the different portions, and was quizzed on the drawings and the specimens under the microscope.



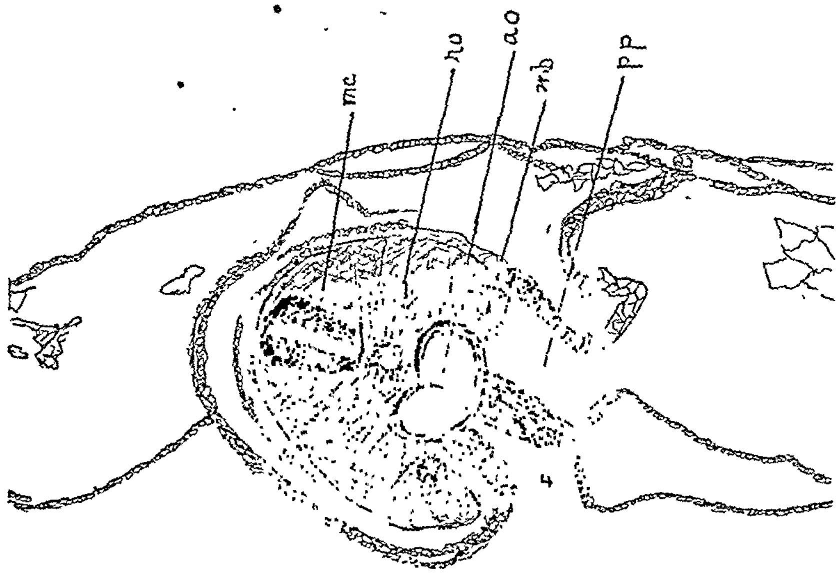




You will notice that in spite of the fact that there is a general *impression among students* that some cannot draw, there is not one disgraceful drawing in the lot, and there are at least two or three drawings from each student in a class of seventy-two. The class only studied the first four days of the embryo's development, so you will recognize all the parts.

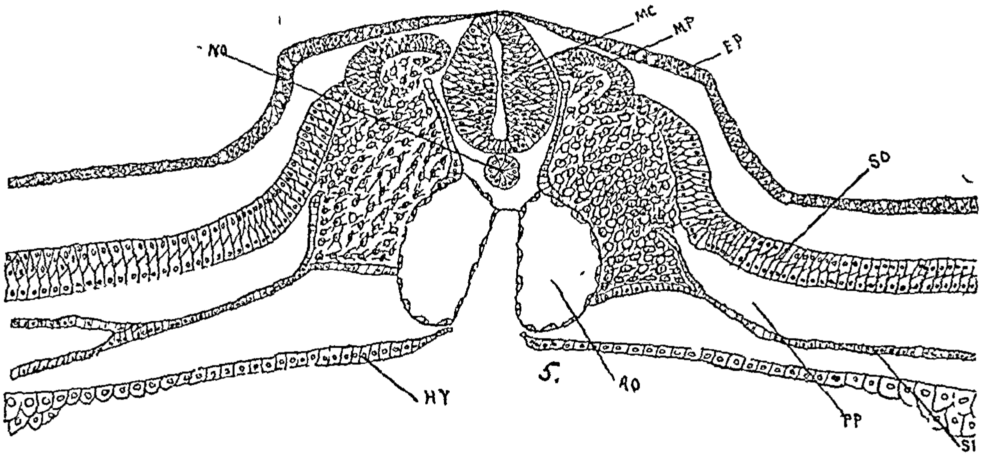


Let me call your attention especially to the drawing of the whole embryo by Mr. Stoltz. Each student made a sketch like this, but Mr. Stoltz, in examining a large number of eggs, found one with an error of development which he has described in full in the *Scalpel*, the magazine published by the students of the college. Both drawings are reproduced here to show the best free-hand drawing, without the use of a camera lucida or other projection device.

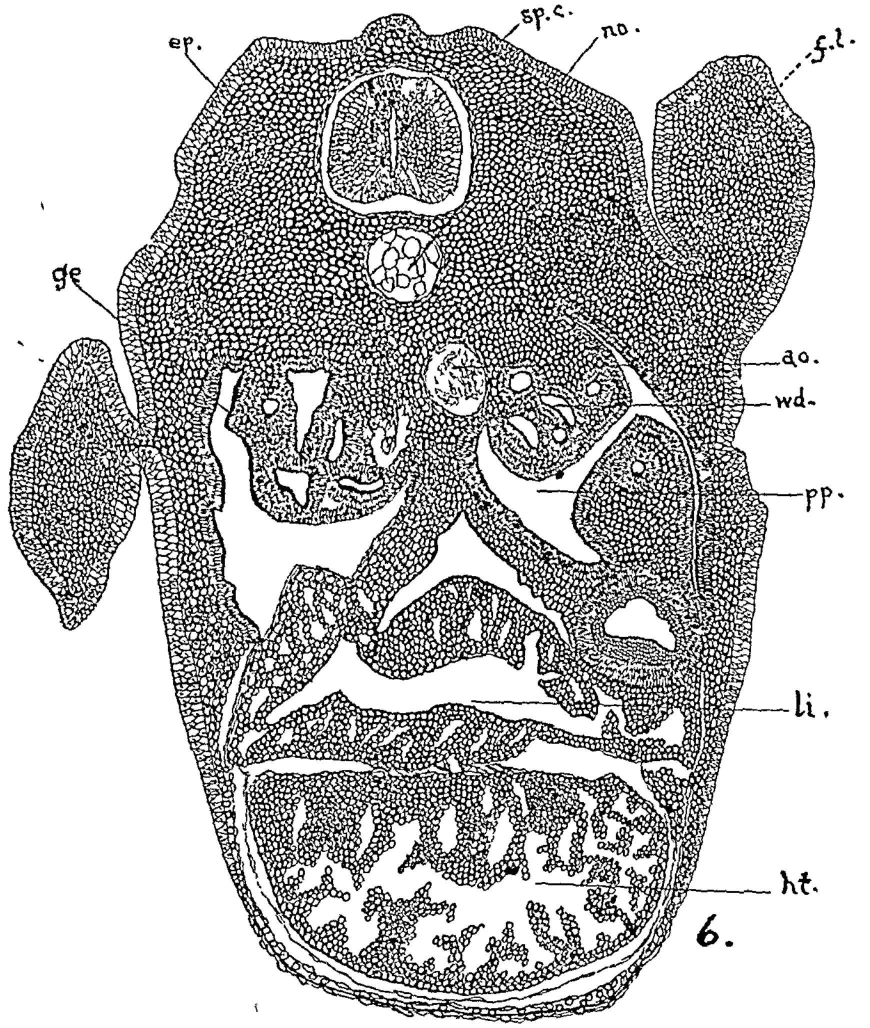


Perhaps the only original departure made by the

College of Physicians and Surgeons during the past year has been in the introduction of an extended course in Biology. This course really covers a course in comparative anatomy, a course in elementary physiology, and a course in the histological study of the elements of mammalian structure. As a whole, the course occupies ten hours a week, and has been most successfully conducted by Prof. Ohlmacher. If it will not tire you too much, allow me to show you some 300 drawings made during the present spring term by a class of twenty-two men who have just begun the study. The complete work of each man, as far as has been required, is before you. You will notice a greater difference in the mechanical execution here than in the embryology. The drawings in all the laboratories are made on paper furnished at cost by the College. It is of uniform size, 11 by 8½ inches, or 8½ by 5½ inches. The drawings occupy a definite portion of the sheet, leaving a margin of one inch all around, and a quarter of an inch more on the left hand end for binding. It is impossible to show this work on the printed page, but a few drawings will be reproduced by the photographic process, much reduced, in order to give a faint idea of the work.



5.

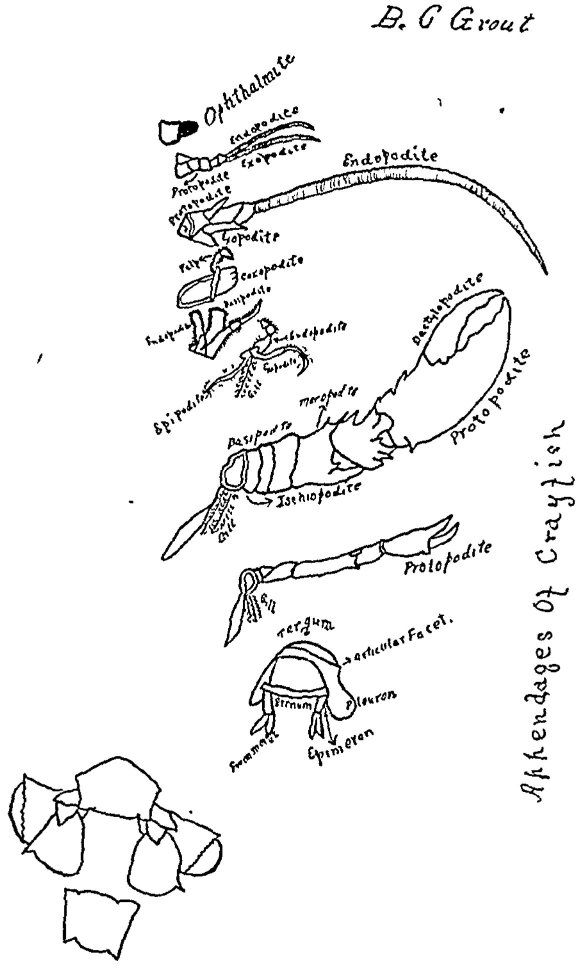


6.

Some of the best drawings are in colors and cannot be reproduced at all, others are too fine to stand reduction, and others have some shading which would require too expensive a method of reproduction.

Dr. Vaughan has given me one idea which is new, and that is of the position of bacteriology in the course. This branch has been placed in our schools in the third year, on account of its intimate connection with medicine and surgery, which fills the fourth year. There seems no reason why it should not appear earlier in the course. Systematic bacteriology could certainly be placed in the second year. Still, I believe that its value to the student would be increased by associating it with pathological study as we have done.

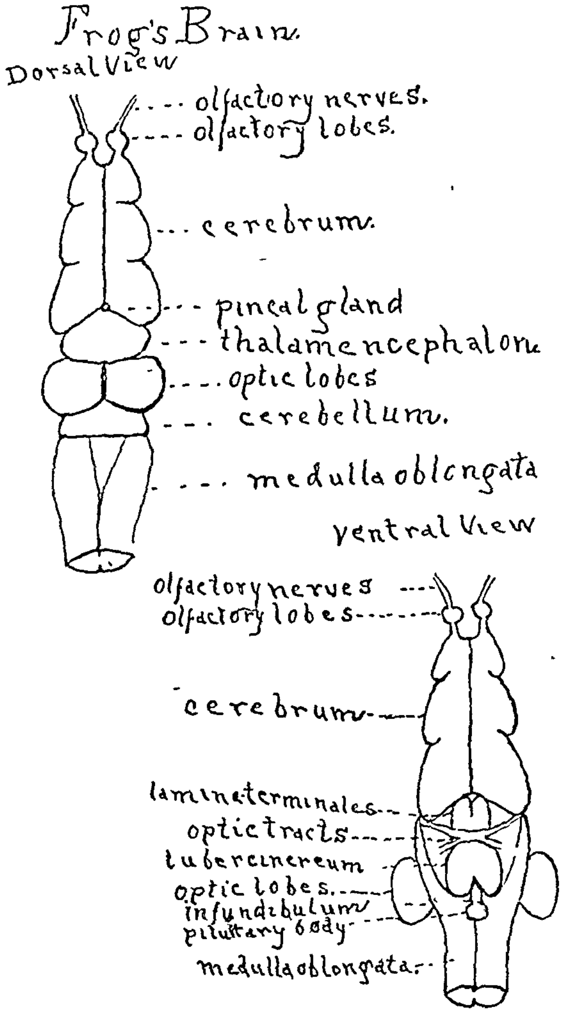
In regard to the length of laboratory hours, several points must be considered. Microscopical laboratories cannot conflict, because we do not have enough microscopes to equip two laboratories at once. Our men cannot spare more than three hours at a time out of their practice, and therefore it has been found necessary with us to make the length of each laboratory exercise two hours. There is no doubt that, had we the entire time of our laboratory teachers at our disposal, it would be better to make the unit of the laboratory exercise three or four hours, as the essayist has suggested.



On account of the necessity of one laboratory exercise following another without intermission, and on account of the necessity of some preparation in each laboratory room before each exercise, we have concluded that it is necessary to provide *at least* two microscopical laboratories. This we have done, and you will see by the time card how our exercises follow one another, and what portion of the student's time in each year's work is occupied in lectures and recitations, in laboratory work and in clinics.

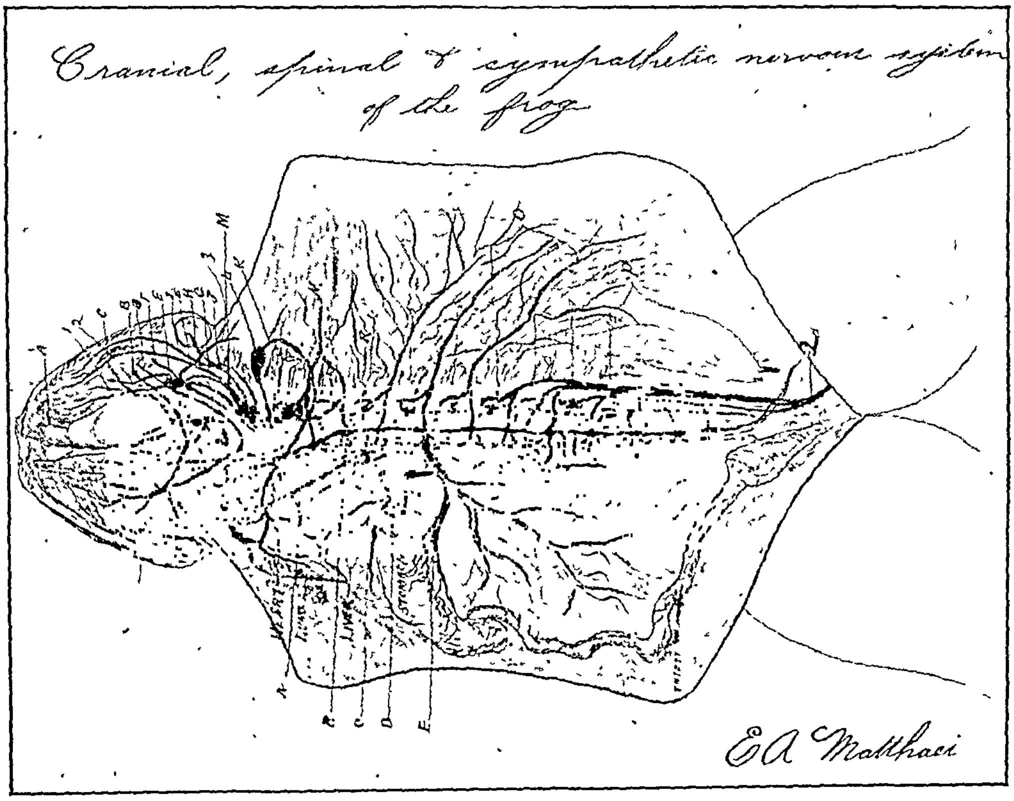
The introduction of laboratory work gives a new impetus to medical education in small cities. The work in this department can be done better, other things being equal, in small medical schools. I predict that these medical schools in small cities that adopt vigorous methods of laboratory teaching will rise to a prominence they could never have attained while medicine was taught by lectures and clinics alone.

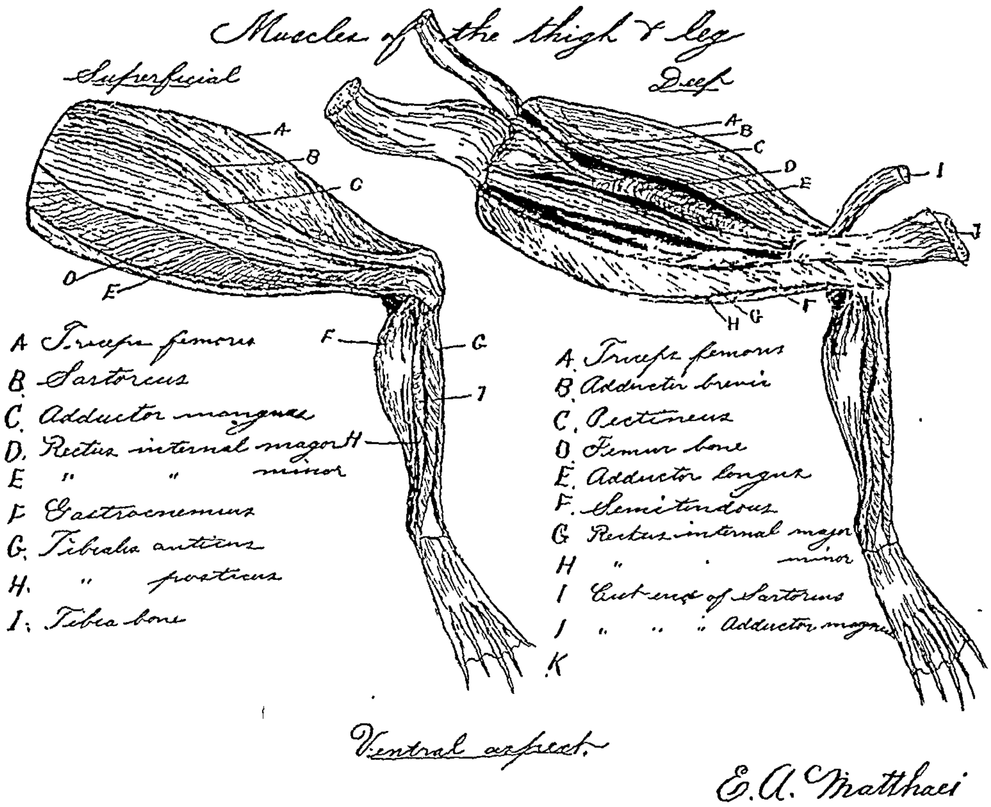
The laboratory teaching will also make a change in the character of medical students. The farmer or butcher medical student cannot hold his knees fifteen or twenty hours a week under the laboratory table throughout a four-year course. He will give place to the educated young men of 20, graduated now in such astounding numbers from the multiplying colleges all over the country, but especially the Central States. It should be our aim to secure these men, if we would have our efforts in medical education succeed.



J. C. Reming.

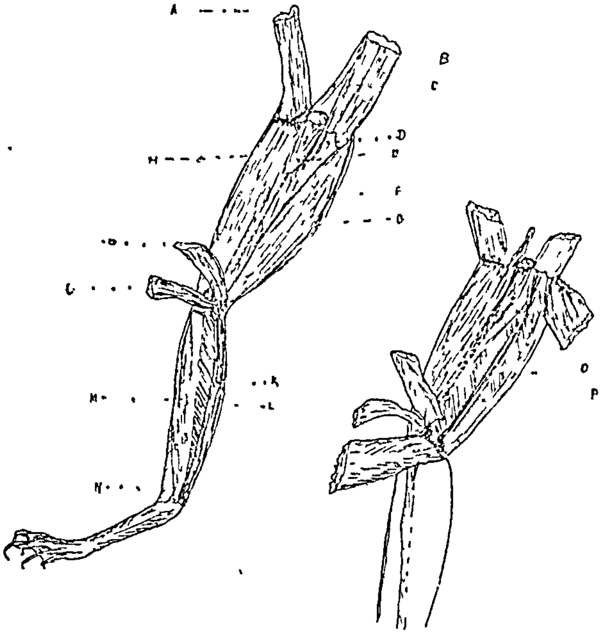
Again, in order to have our laboratory work done in a constantly efficient manner, it must be done by the same men for a long time. This requires money, and more money than any but the largest schools can obtain from students. *That is to say*, laboratory work calls for endowment. Only a few State Universities pretend to support medical schools, and so far as I know only one of these, Minnesota, contributes liberally to the annual expenses of the medical department. It seems strange that the department of the university, which should in this country furnish one-fourth of the entire enrollment, should not have received even 2 per cent. of the endowment. It should be the concerted effort of this Association to educate the generous public to a thorough understanding of our deserts and our needs.





The accompanying figures, numbered 1, 2, 3, 4, 5 and 6, represent reproductions of embryological drawings by several of the students in the class. They are all drawings of cross sections of embryo chicks of various stages of development. These drawings were made on the paper described in India ink, being copies of the class-room drawings which were first made in a note book with lead pencil. No text-book was used in the work of embryology, the work being guided by a few printed syllabi and by oral instruction. Hence the student had no illustration of the object he studied, save the picture his mind conceived. We may, therefore, take these drawings as representing the student's individual conception. The lettering of the various parts is made uniform only for the sake of easy comparison.

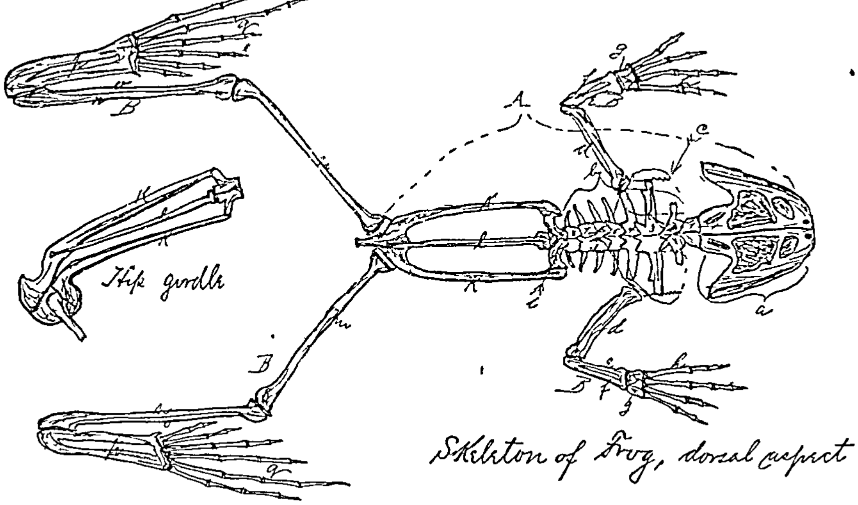
Leg Muscles:



A Cut end of Sartorius
B . . Adductor Magnus
C - Longus
D Adductor Brevis
E Pectineus
F Rectus Anticus Major
G . Minor
H Triceps Femoris
I lower end Adductor Magnus.
J .. .. Sartorius.
K Gastrocnemius
L Tibialis Posticus
M Peroneus
N Peroneus Brevis
O Semi Tendinosus
P Semi-Membranosus.

- H D. Clapp -

XXII.



Skeleton of Frog, dorsal aspect

A axial, B appendicular skeleton. - a head, b vertebrae (9) c shoulder girdle, d. humerus, e radius, f ulna, g. carpus, h digits i, 9th vertebra or sacrum, K hip girdle or pelvic arch, l urostyle, m femur, n tibia, o fibula, p, tarsus, q. digites

F. L. Mueller, May 1892.

Fig. 1 was drawn by Mr. J. F. Adams from a section of the tail end of a 36-hours chick. It shows very clearly the primitive germinal layers, splitting of the mesoblast, mesoblastic somites, notochord and medullary canal not completely closed. Fig. 2 represents three drawings by Mr. O. B. Monosmith, showing a section through the tail end, one through the heart region and one through the fore brain of a 36-hours chick, all from the same embryo. Fig. 3, from an embryo of about 50 hours incubation, by A. M. Fulton. Fig. 4 shows the amniotic folds and amniotic cavity very clearly, and was drawn by Mr. G. A. Hibbert. Fig. 5 is from a section through the hind end of a 3-days chick, by Mr. R. H. Herrold. Fig. 6 was drawn from a section of a 5-days chick, by Mr. J. J. Pierron, and shows the budding of the fore limbs, the development of the heart, liver, urogenital system, etc.

To anyone who has had experience in this kind of work it must be evident that many hours of painstaking labor have been spent in producing some of these drawings.

The few drawings of the spring class in biology here reproduced speak for themselves. They are copies of note book drawings made by the student as he dissected the animal chosen. Huxley and Martin's Practical Biology was used as a guide in the work on the crayfish and frog, and one familiar with this most valuable laboratory guide will know that it contains no figures of the dissections prescribed. Therefore, in this work, as in the course in embryology, the drawings are the student's representation of what he saw as he made his dissections. Moreover, this work of reproducing the curves, elevations and depressions, distinctions between organs, etc., of the *whole object*, is much more difficult than the reproduction of microscopical sections, as every scientific draughtsman knows.

In the biological class each student caried out his own work. He made all the dissections, injections and other preparations required, himself, and then made a drawing of the completed work which he copied on the sheets of paper furnished, either in India ink or in color. It will be noted that some of the work is plain outline drawing, while more ambitious students have shaded and colored their drawings most artistically.

Is it not reasonable to presume that a man who has dissected and verified all the intricate and minute relations of the cerebro-spinal and sympathetic nervous systems of the frog will go to his human subject with a determination of carrying out equally exacting studies? We believe that a student who has by his own labor produced such a drawing as that made by Mr. Matthaei of the cerebro-spinal and sympathetic systems, will be a credit to himself and to his teachers in any more purely medical study.

Will not Mr. Fleming approach his studies on the human brain with a more lively interest and a broader foundation for having dissected and drawn this frog's brain? The subject of human osteology will lose some of its proverbial dryness for Mr. Mueller since he has made his picture of the frog's skeleton and since he became familiar with the bones of the frog's cranium, some of which are no larger than the letters of this type. The myology of the human leg will have no terrors for Mr. Clapp who has so scientifically dissected and artistically represented the leg muscles of the frog. Mr. Grout will better appreciate the mechanism of a man's joints from having studied the appendages of a crayfish.

RULES AND REGULATIONS FOR ORGANIZATION AND MAINTENANCE OF THE SOUTHERN MEDICAL COLLEGE ASSOCIATION.

This Association shall be composed of delegates from Southern Medical Colleges, whose Faculties have signified a desire to become members thereof, signed these rules of organization, and paid the membership fee of $5.00.

The objects of the Association are to cultivate closer and more intimate relation between medical colleges and to elevate the standard of medical education by requiring a more thorough preliminary training and an increased length of medical study.

The Association shall be composed of one or more from each Medical College, belonging thereto, who shall be elected annually by their respective faculties. Each college shall be entitled to one vote in the transactions of the Association.

The officers shall consist of a President, Vice-President, Secretary and Treasurer, who shall be elected annually, just before the adjournment of the annual meetings, and shall perform the respective duties, pertaining to these offices in similar organizations.

The meetings of the Association shall be held at the same time and place of the meetings of the Southern Surgical and Gynecological Association, unless otherwise determined by the Association.

REQUIREMENTS FOR MATRICULATION.

Every student applying for matriculation must possess the following qualifications:

He must hold a certificate as the pupil of some known reputable physician, showing his moral character, and general fitness to enter upon the study of medicine.

He must possess a diploma of graduation from some literary or scientific institution of learning. or certificate from some legally constituted high school general Superintendent of State Education or Superintendent of some country Board of Public Education, attesting the fact that he is possessed of at least the educational attainments required of second grade teachers of public schools. Provided, however, that if a student so applying is unable to furnish the above and foregoing evidence of literary qualifications, he may be permitted to matriculate and receive medical instructions as other students, and qualify himself in the required literary departments, and stand his required examination as above specified, prior to offering himself for a second course of lectures.

The foregoing diploma or certificate of educational qualifications, attested by the Dean of the medical college attended, together with a set of tickets showing that the holder has attended one full course of medical lectures, shall be essential to attendance upon a second course of lectures in any college belonging to this Association.

BRANCHES OF MEDICAL SCIENCE TO BE INCLUDED IN COURSE OF INSTRUCTIONS.

Anatomy, physiology, chemistry, materia medica and therapeutics, theory and practice of medicine, pathology, surgery, obstetrics and gynecology, hygiene, medical jurisprudence, (forensic medicine) and special laboratory work as hereinafter provided.

QUALIFICATIONS FOR GRADUATION.

Candidates for graduation in addition to the usual requirements of medical colleges, must have attended three courses of lectures of not less than six months each in three separate years;

Must have dissected in two courses, and attended two courses of clinical or hospital instructions,

And must have attended one course in each of the special laboratory departments to-wit: 1. Histology and bacteriology. 2. Chemistry. 3. Operative surgery.

These requirements shall not apply to any student who has received a course of medical lectures prior to September 1, 1893.

M. T. BRIGGS,
J. B. MARVIN,
J. S. CAIN, Com'tee.

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MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues and subscription for THE JOURNAL. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, DECEMBER 3, 1892.

ORDINANCES OF THE AMERICAM MEDICAL ASSOCIATION.

The following preamble and resolution, adopted at the last meeting of the Association, should have been appended to those published in the issue of THE JOURNAL of November 19.

The action of the American Medical College Association at the meeting referred to by this resolution will be found on page 664 of this issue of THE JOURNAL.

WHEREAS, The Association of American Medical Colleges has adopted the following regulations, viz.: *Article III of the Constitution.*

§ 1. Members of this Association shall require of all matriculates an English composition in the handwriting of the applicant of not less than two hundred words, an examination by a Committee of the Faculty, or other lawfully constituted Board of Examiners, in higher arithmetic, algebra, elementary physics and Latin prose.

§ 2. Graduates or matriculates of reputable colleges, or high schools of the first grade, or normal schools established by State authority, or those who may have successfully passed the entrance examination provided by the statutes of the State of New York. shall be exempt from the requirements of Section 1.

§ 3. Students conditioned in one or more of the branches enumerated as requirements for matriculation, shall have time until the beginning of the second year to make up such deficiencies, provided, however, that students who fail in any of the required branches in this second examination shall not be admitted to a second course.

§ 4. Colleges granting final examination on elementary subjects to junior students, shall not issue certificates of such final examination, nor shall any member of this Association confer the degree of Doctor of Medicine upon any person who has not been first examined upon all the branches of the curriculum by the faculty of the College granting the degree.

§ 5. Candidates for the degree of Doctor of Medicine shall have attended three courses of graded instruction, of not less than six months each, in three separate years.

§ 6. *Students who have matriculated in any regular* medical college prior to July 1, 1892, shall be exempted from these requirements.

Resolved, therefore, That the American Medical Association most heartily endorses the efforts of the Association of American Medical Colleges to advance the cause of medical education, and demands of the medical colleges of the United States the adoption and observance of a standard of requirement which shall in no respect fall below the minimum standard of requirements adopted by the said college association.

SYMPHYSIOTOMY IN THE UNITED STATES.

A brief item on page 604 of the current volume of THE JOURNAL referred to the first recorded symphysiotomy in this country. The date of this operation was not there stated, but it was September 30, 1892. A second operation followed sharply after on October 3, in the University Maternity at Philadelphia. The obstetric surgeon in this second case was DR. BARTON COOKE HURST, who had the assistance and advice of DRS. NORRIS and HARRIS. The report of the case has appeared in the *Maryland Medical Journal* for October 29. The mother and child did well. The union of the symphysis took place promptly, and three weeks after the operation the mother was walking about the house as well and firmly as ever.

The patient was a primipara in this case as well as in the case of DR. JEWETT of Brooklyn (the first one), and the child of each was born living: unfortunately in the case of DR. JEWETT'S infant death took place about twenty-four hours after birth, from the prolonged compression to which its head had been subjected by its impaction in the contracted pelvis of the mother.

The technique of symphysiotomy will, under ordinary circumstances, be easy and void of complications. DR. HURST employed the curved knife Galbiati, one of the three at that time in the country. He at first thought that he would make the section of the symphysis with an ordinary probe-pointed, curved bistoury but he was glad to lay it aside and take up the Galbiati blade. In regard to the use of forceps in the delivery of the child, Dr. Hurst holds that it is not necessary to lay down any hard and fast rule—each case should be taken on its own merits and indications—but he will probably rely upon the forceps in his future cases as he did in his first one.

We judge that this operation has been properly re-introduced to the notice of the American profession and will receive a fair trial especially in our lying-in wards and hospitals.

NEW FORM OF IODINE TREATMENT FOR TUBERCULOSIS.

DR. RENZI has given, in the *Revista Clinica e Therapeutica*, some facts regarding his new method of employing iodine in phthisical cases. His formula prescribes the use of iodine one part, iodide of potassium, three parts, chloride of sodium, six parts, and distilled water 1000 parts. He injected this solution into the ear-vein of healthy, and also diseased rabbits, and into the subcutaneous tissue of rabbits, guinea-pigs and dogs. Having in this manner carefully established the complete tolerance of the compound, he began to give it to his phthisical patients. Hypodermatic dosage was first tried with them, as much as 100 grains having been thus given. This method was not well borne, and the remedy was next tried by the mouth, the dose being from 500 to 550 grains. Nineteen patients, nearly all of them with advanced phthisis, were thus treated. Symptoms of iodism were produced in some patients, but did not persist long after a discontinuance of the doses. In all these persons there was an increase of appetite and of body-weight. There was an increased flow of urine, the temperature was brought down to normal, and the number of bacilli in the sputa was diminished. The writer believes that the results obtained from this plan of using iodine will compare favorably with those of any of the other treatments that are at present in vogue.

HEIDENHAIN'S MICRO-TECHNIQUE.

The course of science is from the simple to the complex; and then again, the extension of science depends upon the adoption of the simpler for more intricate and complex tools and methods. Histology and pathology advanced with the perfection of the microscope and then rested until the microtome gave them a new impulse. We hear no longer of microscopists, but of microtomists.

The new impulse which FLEMMING and ALTMAN have given microtomy depends upon more perfect and successful methods of fixation and staining. These methods have been too difficult and the materials too unstable to permit of their general use. It is, therefore, with satisfaction that we read in the *Medical News*, of November 19, OHLMACHER'S recommendation of the simpler method of HEIDENHAIN.

This method is especially adapted to operators and physicians. The perfectly fresh tissue is cut in cubes no more than three-eighths of an inch square. It is fixed in a supersaturated solution of corrosive sublimate in water containing one-half per cent. of common salt. It must remain in this solution not more than an hour. It is dehydrated in 95 per cent. alcohol in the usual manner. Care must be taken not to leave it many days in alcohol as the tissue becomes too brittle to cut. It is imbedded in the usual manner and may be thus kept any length of time. The crystals of sublimate are removed from the sections on the slide by means of the tincture of iodine. This is again removed with alcohol. Any method of staining may be used.

Should this method be adopted in this country the author predicts great advance in the value of our histological and pathological studies.

PRIVATE ASYLUM FOR THE TREATMENT OF NEUROTIC DISEASE.

The rapid increase of the number of private asylums in this country, indicates a revolution in the methods of treatment. Dependence on locks and bars, and chemical restraint by drugs is giving away to surroundings and hygienic measures, adapted to suit the wants of each individual case. In England all private asylums for the insane and feeble-minded, are registered and under the control of the commissions of lunacy, who visit them, and require that they keep a record of all cases. In this country no public oversight is exercised, and the number and variety of such places depend on commercial wants and conditions, as interpreted by the owners and managers. The lunacy report of Great Britain for 1891, shows that the number of these asylums are eighty-six, and the number of patients is steadily increasing. For 1891 this increase was one hundred and eighteen patients. The suicides and injuries reported are much less than in other asylums, and the commissioners report that their management has been very satisfactory. In this country there are about fifty such asylums, including reputable sanitariums, or places under the control of regular physicians. Most of these are in New England and the Middle States and are managed by physicians who have had experience in public asylums as superintendents or assistants. Very little is known of their condition or management outside of the reputation of the managing physician. This is the only guide the profession has, and fortunately in most cases the physicians in charge recognize this, and use every means to stand well before the profession. As a rule, this class appeals to the medical public through its papers and discussions of the special topic of its work. There is another class whose extravagant pretensions and assumed results of treatment, with laudations of their means and methods, and superiority to others, are open to some suspicion. Extravagant advertisements, with circulars that have a familiar commercial ring that sounds unpleasant in scientific circles, are not uncommon to this class. A third class of asylums are managed by persons who are unknown to the profession, and who have no record or standing in the medical directories. Coming up suddenly from the unknown, they rely entirely on pretensions, and sooner or later disappear under a cloud of wrong doing. The pecuniary rewards of this field of medicine are less than in general practice, but the labor and exposure is also less, and the real scientific man has more time for study and reflection.

Nearly all the physicians in charge of such places have acquired a fascination for this field of labor in public institutions, and find it difficult to settle down to private practice, hence are compelled to take up this work. Others have a false impression that this is an ideal work, free from cares and labor, and rush into it only to be disappointed and drop out. The number of new asylums each year, and the number that die out and disappear, show that here as elsewhere, the "survival of the fittest" takes place. These places managed by good men, are supplying an increasing want that is becoming daily more apparent. These institutions should come under some control, or State supervision, and be registered and required to report their work; to submit to inspection, and come under some general rule of management and conduct. Then the medical public could have some guide and assurance, that all patients placed in them would receive rational and scientific care and treatment.

At present physicians wishing to place patients in private asylums, must make personal inspection of them or trust to circulars and statements before they can decide. If he has an inebriate patient, the number of empiric institutions that will claim to make a cure, will be bewildering. All this is wrong; while every physician has a right to open his house for the treatment and cure of his own private patients, when he extends the circle of his practice and receives strangers, he owes it to the public to come under some general supervision and make his means and methods known. The public demands that any one who receives sick and incompetent persons for treatment, should have some degree of capacity, both in scientific skill and surroundings to do this work. Private asylums have become a permanent necessity, but their value and usefulness are seriously periled by the empiric rivals who are starting up in every direction. A crusade against the quack asylums is a new field for reform, anxiously waiting for some pioneer to lead astruggle for the holy grail.

EDITORIAL NOTES.

Three Temperance Beverages.—From an English journal we copy the following suggestions for non-alcoholic drinks:

"Stokos is prepared thus: Put from 4 to 6 ounces of fresh oatmeal, ground as fine as flour, into a pan, mix with a little cold water to the substance of cream, then add 5 or 6 oz. of loaf sugar and a fresh lemon cut in thin slices with the pips taken out; add a gallon of boiling water. Stir thoroughly while the water is being poured on. Use hot, warm or cold. The lemon may be omitted or any other flavoring used instead. Costs 3d. a gallon, or five gallons 1s.; four lemons are enough for five gallons.

"Cokos is a good nourishing drink, made as follows: Put 4 oz. of fresh fine ground oatmeal, 4 oz. of cocoa, into a pan mixed with a little cold water into a thin batter, then add 6 oz. of sugar, pour on a gallon of boiling water (stir while water is being added). Take to the field in a stone jar. Costs 4d. a gallon.

"Hopkos is a good harvest drink: Boil ½ oz. of hops and ½ oz. of ginger (bruised) in 1½ gallons of water for 25 minutes; add 1 lb. of best brown sugar, and boil 10 minutes more; then strain and bottle, or put into a cask while hot; it will be ready for drinking when cold. It should be kept in a cold place. Dried horehound may be used instead of hops. Costs 3d. a gallon."

The inventor of "stokos, cokos and hopkos" is Mr. John Abbey, of Norwich, who says they have become quite popular with the crop-gatherers of 1892.

The "One Hundred Day" Disease.—Dr. Alice M. Ross, of Swatow, writes in the *Reporter*, October 8, that whooping cough goes by the name of the "hundred day disease" in Japan. That is a term that tallies fairly well with our own average prognosis, if we except those fortunate cases that are amenable to antipyrin or exalgine.

Hospital Nursing in Paris.—M. Laurent, of the Municipal Council, of Paris, is quoted by *The Lancet* as saying that the wages paid for nursing at the hospitals are altogether too small to attract the services of suitable persons. Those who become nurses are either saintly heroines or they are wrecks of humanity who cannot find employment anywhere else.

The "Medical Press and Circular."—This ever welcome London periodical, in its issue of November 2, states that a libel suit has recently been entered by the cancer-curer, Count Mattei. This is the second suit of the kind—the first having been that of our fellow citizen, Keeley—that has been thrust upon *The Press and Circular* by men outside the pale of rational medicine. In an editorial entitled "The Dangers of Honest Journalism," the writer regrets that the costs should be so heavy as they are, but he feels confident that these financial wounds will be healed by the approbation and support of the journal-reading part of the profession. But whether that shall be so or not, the editor proposes to keep his anti-quackery colors flying, claiming to be "the only British journal that is obnoxious to shams, and that has the courage to expose them." One other note-worthy point about this journal is the fact that it is not overloaded with a mass of indifferent material and does not cumber up one's desk and shelf room as do the larger and the so called "great uncut" journals. We wish *The Press* a happy issue out of its present and impending prosecutions.

BOOK REVIEWS.

The Student's Quiz Series. Practice of Medicine. A manual for students and practitioners by Edwin T. Doubleday, M.D., and J. Darwin Nagel, M.D. Philadelphia: Lea Brothers & Co.

This is an excellent little manual, arranged like its fellows in the form of questions and answers. It is based largely upon the works of Fagge, Niemeyer, Bennett, Flint, Delafield and Gowers. While we have heretofore expressed doubts as to the value of works of this sort, yet we can confidently recommend this work as one of the best of its kind. Especially do we commend that portion dealing with nervous diseases.

MISCELLANY.

Dr. John Ridlon has been appointed Professor of Orthopedic Surgery in the Post-Graduate Medical School of Chicago.

The Messrs MacMillan & Co. announce that the recently completed edition of Foster's Text-Book of Physiology in four parts is to be supplemented by the issue of an appendix on "The Chemical Basis of the Animal Body," by A. Sheridan Lea, Sc.D., F.R.S.

North Central Illinois Medical Association.—The nineteenth annual meeting of this Association will be held in the City Hall, Mendota, Ill., on Tuesday and Wednesday, December 6 and 7, 1892. The following is the general program:

Bacteriology, J. W. Edwards, M.D., Mendota. Discussion: H. Ziesing, M.D., Peru; T. W. Burrows, M.D., Serena.

Actinomycosis, T. C. Fenton, M.D., Streator. Discussion: B. S. Roseberry, M.D., Lacon; G. A. Dicus, M.D., Streator.

Nasal Polypus, L. G. Thompson, M.D., Lacon. Discussion: J. H. Coulter, M.D., Chicago; A. E. Owens, M.D., Princeton.

Some Clinical Experience in the Treatment of Diphtheria, Harriet E. Garrison, M.D., Dixon. Discussion: E. T. Goble, M.D., Earlville; C. E. Davis, M.D., Peoria.

Diphtheria and Its Treatment, C. D. Chalfant, M.D., Streator. Discussion: L. R. Burns, M.D., LaSalle; Jas. Tweddale, M.D., Washburn.

My Symptoms, Feelings and Impressions During an Attack of Metastatic Rheumatism of the Meninges of the Brain, J. S. Whitmire, M.D., Metamora. Discussion: J. C. Hathaway, M.D., Ottawa; T. H. Stetler, M.D., Paw Paw.

The Relations of Physicians with County Coroners, E. J. Carroll, M.D., Somonauk. Discussion: J. T. Milling, M.D., Peru; W. A. Mansfield, M.D., Metamora.

Typhoid Fever, J. Stout, M.D., Ottawa. Discussion: J. D. Scouller, M.D., Pontiac; F. M. Pendleton, M.D., Magnolia.

Our Present Knowledge of Epilepsy, R. Hemala, M.D., Onarga. Discussion: J. W. Pettit, M.D., Ottawa; C. E. Fogg, M.D., Lowell.

Tenotomy in Antero-Lateral Spinal Sclerosis, J. A. Freeman, M.D., Millington. Discussion: G. A. Zeller, M.D., Peoria; I. H. Reeder, M.D., Lacon.

Therapeutical Uses of the Coal Tar Preparations, F. C. Robinson, M.D., Maywood. Discussion: G. F. Schreiber, M.D., Wyanet; D. S. Jenks, M.D., Plano.

Volunteer Papers.

The S. D. Gross Professorship of Pathological Anatomy Fund.—The Committee appointed by the General Committee to audit the account of Dr. Richard J. Dunglison, Treasurer of the S. D. Gross Prosessorship Fund of the Alumni Association of Jefferson Medical College, respectfully report that after an examination of such account they find that there were sixty contributors to the fund, the total amount contributed being $3,499 00. In accordance with a resolution of the General Committee these contributions have all been returned to the donors, and the Treasurer has presented a voucher for each amount thus refunded. A great portion of the whole amount has been retained undistributed until recently, so that the interest on the amount might so accumulate as to enable the Committee to refund to each subscriber the full amount of his contribution, without any deduction for expenses of publication of circulars, postage, etc., which were necessarily heavy, from the widespread diffusion given the objects of the Fund.

The names and addresses of the subscribers and the amounts contributed by them are as follows:

Dr. S. D. Gross, Philadelphia, Pa	$1,000 00
" J. Marion Sims, New York, N. Y	500 00
W. L. Conyngham, Wilkes-Barre, Pa	200 00
Dr. Hunter McGuire, Richmond, Va.	125 00
" Joseph Hearn, Philadelphia, Pa	100 00
" Albert H. Smith, Philadelphia, Pa.	100 00
" N. Bozeman, New York, N. Y.	100 00
Henry C. Lea, Philadelphia, Pa	100 00
Dr. T. Addis Emmet, New York, N. Y	100 00
" N. Senn (Collections) Milwaukee, Wis	63 00
" J. B. Weever, Mount Vernon, Ind	50 00
	$2,438 00
Brought forward	$2,438 00
Dr. J. M. Barton, Philadelphia, Pa.	50 00
" P. S. Conner, Cincinnati, O.	50 00
Mrs. Elizabeth Casey, Ballston Springs, N. Y.	50 00
Dr. L. Turnbull, Philadelphia, Pa	50 00
" R. A. Given, Burn Brae, Pa.	50 00
" A. Stillé, Philadelphia, Pa	50 00
" R. Douglas, Nashville, Tenn	50 00
" J. Solis-Cohen, Philadelphia, Pa	50 00
" J. W. Holland, Philadelphia, Pa	50 00
" L. D. Wilson (Collections) Wheeling, W. Va.	45 00
" Dr. R. Battey, Rome, Ga.	25 00
David H. Lane, Philadelphia, Pa.	25 00
Dr. C. E. Kamerly, Philadelphia, Pa.	25 00
" W. L. Kneedler, U. S. Army	25 00
Camden (N. J.) Medical Society.	25 00
Dr. Richard J. Dunglison, Philadelphia, Pa	25 00
" T. H. E. Gruel, Philadelphia, Pa	25 00
" James Graham, Philadelphia, Pa.	25 00
" C. A. Siegfried, U. S. Navy.	25 00
" C. Wirgman, Philadelphia, Pa.	20 00
" E. Phillips, New Haven, Pa	20 00
" R. T. Coleman, Richmond, Va	20 00
" J. B. Ferguson, Fort Sisseton, Dak.	20 00
" H. N. Young, Chicago, Ill	20 00
" J. R. Weist, Richmond, Ind	20 00
Persifor Frazier, Philadelphia, Pa.	20 00
Dr. D. W. Cheever, Boston, Mass.	20 00
" B. A. Watson, Jersey City, N. J.	20 00
" H. Fritsch, Philadelphia, Pa	20 00
" John Graham, Philadelphia, Pa	20 00
" R. A. Kinloch (Collections) Charleston, S. C.	15 00
" C. Lester Hall, Marshall, Mo.	10 00
" John H. Day, Walla Walla, Wash	10 00
" W. Ashbridge, Philadelphia, Pa	10 00
" J. L. Sweet, Newport, N. H.	10 00
" E. Grissom, Raleigh, N. C	10 00
" W. L. Richardson, Montrose, Pa	10 00
" W. W. Nye, Hiawatha, Kan.	5 00
" J. H. Mackie, New Bedford, Mass.	5 00
" R. S. Wallace, East Brady, Pa	5 00
" B. B. Lenoir, Lenoir's, Tenn	5 00
" I. E. Clark, Moravia, Tex.	5 00
" Otis Ayre, Le Seuer, Minn.	5 00
" H. R. Bigelow, Washington, D. C.	5 00
" Thos. Lyon, Williamsport, Pa	5 00
" Silas W. Cox, Goldsboro, N. C	2 00
" W. W. Dale, Carlisle, Pa.	2 00
" R. C. Hays, Shippensburg, Pa	1 00
" I. C. Brown, Columbus Junction, Ia	1 00
Total	$3,499 00

J. Ewing Mears, M.D.,
William B. Atkinson, M.D.,
Auditing Committee.

Philadelphia, October, 1892.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from November 19, 1892, to November 25, 1892.

First Lieut James D. Glennan, Asst. Surgeon U. S. A., is granted leave of absence for one month.

Major John C. G. Happersett, Surgeon U. S. A., is granted leave of absence for one month, on surgeon's certificate of disability, with permission to leave the limits of the department.

A board of officers, to consist of Col. Joseph R. Smith, Asst. Surgeon-General U. S. A.; Major David L. Huntington, Surgeon U. S. A.; Major Benjamin F. Pope, Surgeon U. S. A., is by direction of the President, appointed to meet at Whipple Bks., Ariz., on Monday, November 28, 1892, or as soon thereafter as practicable, for the examination of Capt. Louis M. Maus, Asst. Surgeon, with a view to determining his fitness for promotion, as contemplated by the Act of Congress approved October 1, 1890.

Capt. L. W. Crampton, Asst. Surgeon U. S. A., is granted leave of absence for one month, with permission to apply for an extension of three months.

Major Calvin De Witt, Surgeon U. S. A., is granted leave of absence for one month, with permission to apply to the proper authority for an extension of one month.

Capt. W. W. R. Fisher, Asst. Surgeon U. S. A., leave of absence for seven days granted is hereby extended fourteen days.

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ORIGINAL ARTICLES.

DIET IN ITS RELATION TO THE TREATMENT AND PREVENTION OF DISEASE.

Read before the Section of Physiology and Dietetics at the Forty-third Annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY AUGUSTUS P. CLARKE, A.M., M.D.,
OF CAMBRIDGE, MASS.

The study of dietetics from the earliest ages among people of different nations that have cultivated the art of medicine has often been an important subject for consideration. Thus, in the Hippocratic Treatises mention is made of diet in health as well as in disease. In the treatment of certain fractures the ancients had different grades of diet, as the full, the ordinary, and the low. The diet was sometimes restricted; food that was of a laxative character was not unfrequently employed. Abstinence from flesh and from wine was often enjoined; in such cases a more nourishing diet was gradually resumed. The aphorisms of Hippôcrates embody many regulations respecting diet. A slender and restricted diet in chronic disease was regarded by Hippocrates as always dangerous. In the more acute diseases an attenuating diet was used. From the writings of the ancients it is evident that they attained to a high degree of knowledge as regards the influence which food exercises in health and in disease. Such knowledge obtained was a natural sequence of the manner of their living. As those nations advanced in the upward scale of civilization the arts multiplied, commerce extended and wealth so increased that the pleasures in living became numerous and far-reaching. The accounts of the excesses indulged in at the table even when placed in comparison with some of the more modern customs seem almost incredible. The praise which Cicero bestowed on his host for the thoughtfulness in providing him an emetic to be taken before the feast was served, has become proverbial. Luxurious tables during the ascendency of Rome were not limited to the confines of that mighty capital, but were often abundant in the more distant parts of the empire. During a recent visit to the excavations made at Pompeii and at Herculaneum I became interested, not only in many articles and utensils taken from the ruins, but also in the evidence of comforts and luxuries which wealth afforded to many of the inhabitants of those cities, which were buried by the eruption of Vesuvius. M. Monnier[1] has given a good account of one of the suppers, taken from a bill of fare found at Pompeii. This bill of fare found in the ruins was well preserved. The menu was taken from the house of Paratus, not an emperor but a citizen, who of course, indulged in only a mere modest repast.

First Course.—Sea urchins, raw oysters at discretion, pelorides or palourdes (a sort of shell fish now found on the coast of Poitou, in France). Thorny shelled oysters, larks, a hen pullet with asparagus, stewed oysters and mussels, white and black sea-tulips.

Second Course.—Spondulæ, a variety of oysters; sweet water mussels; sea nettles, becaficoes; cutlets of kid and boar's meat; chicken pie; becaficoes again, but differently prepared, with an asparagus sauce; murex and purple fish. The latter were but different kinds of shell-fish.

Third Course.—The teats of a sow *au naturel*, they were cut as soon as the animal had littered; wild boar's head (this was the main dish); sow's teats in *a ragout;* the breasts and necks of roast ducks; fricasseed wild duck; roast hare, a great delicacy; roasted Phrygian chickens; starch cream; cakes from Vicenza.

The deglutition of all these was assisted by frequent draughts of wine made in the vineyards planted on the slopes overhanging the walls of Pompeii. This wine was often of a light grade, was of fair quality and if sterilized could be kept for many years. Illness from over-indulgence or from errors in diet was not unknown to the Pompeians. From what has been discovered in the ruins at the house of the surgeon, and also in the ruins at the shop of the apothecary it becomes evident that this ancient people often sought for relief from maladies and from functional disturbances induced by disregard of those fundamental principles which, had they been observed would have led to much higher degree of health. Temperature of food which has been served is an important subject for consideration. Food when heated to a high degree may at first act as a stimulant but will nevertheless cause an undue contraction of the arterioles. This condition of the capillary circulation will cause a diminution of the flow of the fluids necessary for digestion, will lead to gastric anæmia and to the occurrence of certain forms of dyspepsia. My own professional experience, however, justifies me in making an urgent plea for regular ingestion of warm food, which not only conserves the resources of the stomach, but also overcomes the tendency to the indulgence in those stronger stimulants, the use of which so often results in physical as well as moral degradation. Dyspepsia and indigestion before the occurrence of marked organic lesion can almost invariably be cured by a rigid adherence to a regulated diet. All foods should be thoroughly masticated. Fermentable articles should in great measure be avoided. In this list may be included certain starches, sugars and sometimes fats. It is often, however, observed that many kinds of food which are seemingly ill-adapted to a dyspeptic may be wholly innocuous when taken singly and in moderation. Thin soups and allied articles have in my practice been the best adapted for a cure; raw oysters are often beneficial, though I believe the nutritive properties of this class of food have been overrated.

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[1] "The Wonders of Pompeii," by M. Marc Monnier, p. 161.

The lighter grades of meats, such as mutton, lamb, game, venison, and poultry are to be preferred to the meat furnished by the butcher. Eggs, when poached or boiled, are to be recommended. Eggs beaten or whipped up with water or with wine are not as good on account of the danger of the admixture of atmospheric air. Farinaceous articles, including stale bread, tapioca, sago, corn bread, rice, hominy, macaroni, crackers of different grades, cream and butter are also to be recommended. Certain fruits and vegetables are often required by the dyspeptic. In this list may be introduced apples, when baked, grapes, oranges, peas, spinach, asparagus, celery, lettuce, string beans, and peas, occasionally dandelions and chicory. In cases in which the patients are of a plethoric habit, cold water may be drunk half hour before each meal. In those cases in which the persons are of nervous temperament or are anæmic, water of the temperature of 110° F. to 120° F., should be taken in preference. The dyspeptic should scrupulously avoid partaking largely of articles of food that have been hardened in the preparation of cooking, or of articles that are rich or have been so highly seasoned, or have been prepared in such a manner as to render them difficult of digestion. Such articles should be avoided, not only on account of their giving rise to immediate disturbances, but also on account of their leading to an inflammatory condition of the mucous and glandular tissues, and to debility and atrophy of the structures entering into the organs essential to production of the digestive process. Closely connected with the consideration of food adapted for gastric disturbances is the consideration of food for renal affections. In the treatment of uric acid diathesis, notice must be taken relative to the habits and occupation of the patient. In a case in which the patient is habitually engaged in literary pursuits food containing some of the protein elements will often be indicated. An azotized aliment to a limited extent must be allowed. Food consisting largely of the farinaceous element will suffice for the invalid who is able to take prolonged and regular exercise, such as mountain climbing, riding on horseback, gardening and farming, and manual labor generally. Certain forms of carbo-hydrates, however, such as wine, fermented liquors, and perhaps most of the alcoholic preparations, should be excluded in a large number of cases which occur in the different kinds of renal disease. In cases of excess of urates, or in lithic diathesis, a diet abounding in alkaline salts must be employed. For in such cases there will be found in the blood insoluble uric acid the presence of which can be safely overcome only by the proper administration of food. In cases of chronic nephritis, in which the urine voided is excessive in quantity and is more or less albuminous, milk usually agrees well and should be freely taken. Water which has been sterilized should also be taken in liberal quantities. Most of the articles of diet mentioned as suitable for cases of dyspepsia will often be found beneficial in the management of the diet for this form of renal disease. In the treatment of obesity a diet composed largely of animal food has often been recommended. My own professional experience leads me to oppose such a method of procedure. In a case in which the food is limited to a meat diet there is apt to occur an excess of urea. In the case of G., aged 48 years, and whose weight was three hundred and fifteen pounds, an attempt to effect reduction of weight by diet, consisting in great measure of rare beef, roast mutton, boiled ham and stewed veal, each taken on different days, was undertaken by direction of his physician. After a year's experience on this routine course, the patient applied to me for treatment of an attack of gravel. He had begun to pass from the bladder small calculi of uric acid. Under my treatment the use of all kinds of animal food was immediately discontinued; a plain, vegetable diet with milk and gluten, eggs, fish, with some fruits, and sterilized water were prescribed. The patient gradually improved. The sediment of the urine disappeared. There were fortunately no gastric disturbances. Within one year the weight had materially diminished; the morbid craving which had been engendered for animal food was completely overcome. The patient regarded himself as in sound condition; he was able to take long walks daily without becoming fatigued.

In this connection I cannot refrain from remarking that the substitution of animal diet exclusively for a mixed diet or for one composed in great measure of the lighter fruits, vegetables, together with a small amount of eggs, milk, fish, and other articles whose waste products are easy of elimination, for persons suffering from excessive obesity is according to my experience, a most pernicious method of procedure. This leads to the consideration of diet for those who suffer habitually from the rheumatic diathesis. In the management of such cases one should not loose sight of the important relation subsisting between the ingesta and the egesta of the human organism. In many cases of troublesome rheumatic symptoms the digestive function is apparently well performed. In such cases the patient over-eats because he feels weak; not because he has not taken an adequate amount of nourishment, but because there has been a failure on the part of the eliminative organs in excreting the surplus material which has been taken into the stomach, been carried into the circulation and finally has been deposited among the tissues and organs of the body. In the treatment of this class of cases a radical change in diet has often to be made. All articles of food that have a special tendency toward the elaboration of the biliary principles and also of the urea should be wholly excluded for a long time from the diet list.

That form of renal disease occurring in the female when pregnant should always demand our greatest solicitude. The food allowed to be taken by such a patient should always be light and easy of digestion. In the treatment of this class of cases I have invariably found that all butcher's meat should be interdicted. In the case of Mrs. S., who in her first confinement had convulsions precipitated by renal complication, food composed largely of animal diet had been prescribed up to the very hour of the onset of labor. I was not called to this case until labor had begun. The convulsions were fortunately overcome; she was kept afterwards on milk and farinaceous articles to which eggs and fresh fish were frequently added. In her second pregnancy renal trouble was of the mildest type; labor was accomplished without the occurrence of eclampsia. During the third pregnancy she was not under my care. The directions which I had heretofore enjoined regarding the diet were not carried out; the convulsions appearing in that third labor evidently in consequence of the re-occurence of the renal complication, I was assured were the immediate cause of death. In my own practice I have notes and reports of several other cases in which renal disease brought on or hastened by pregnancy, was practically cured or overcome by the strict intervention of light but nourishing diet from which animal food of every description had been excluded.

Although our knowledge regarding the original cause of the appearance of cancer is as yet meagre still some evidence by clinical experience has been offered that this disease is not wholly uninfluenced in its origin and course by diet. My first impressions that cancerous affections would be influenced by diet were received from my late Professor, Dr. Henry I. Bowditch, who mentioned to me the case of an eminent physician. It seems that a cancerous growth appeared on the face of the physician. This led him to consult prominent surgeons in regard to the advisability of its removal. A decision against the safety of a resort to surgical measures prompted the sufferer to consider more carefully the influence the particular articles he had been accustomed to use in the diet list for his own use. His diet had always been a most generous one; he therefore began to suspect that it had exerted material influence in the causation of his disease. Suffice it to say. that the change from full diet to one that was radically different but opposite in its character, exercised a most important influence in affecting a retrograde action of the disease. Though evidence has been afforded that cancer in some of its various manifestations is contagious, it is also important to observe that its occurrence so common in the uterine tissue after the menopause and for sometime afterward indicates that the structures of that organ are favorable soils for its development. The adaptation of the uterine tissues at this particular period further indicates that these favoring conditions are dependent on accidental circumstances.

When the tissue is in a normal state the regular recurring catamenia no doubt do attenuate and finally discharge any germs that gain entrance into those parts. After the cessation of the catamenial flow, the uterine cervix or body undergoes in histological structure such important changes that the tissues become to a certain extent culture chambers in which disease germs gaining admission may develop. The proneness of these tissues to disease is more particularly enhanced when the nutritive forces determined to the genital tract are no longer expended through the agency of the menstrual molimen, but are retained and as it were stored and unemployed. These tissues for a while at least, become obnoxious to the growth of germs, bacilli, or to certain bacteria. By lessening the currents of nutritive force distributed to the tissues of the organism we modify, or starve those embraced within the area of the uterine zone, and render them less prone to the invasion of bacterial and of adventitious elements. In three cases of uterine cancer treated almost from their inception, principally, by careful management of the diet I am satisfied that the disease was practically extinguished. In a fourth case to which I was called, had I had the good fortune to commence earlier or at least had been able to carry out more regularly and systematically the management of the diet that was indicated, I feel confident a successful issue would have been accomplished or an important modification in the results of the invaded tissues would have been effected. The facts observed in the above cases are of course, too few for establishing any general conclusions, though they suggest the importance of further observation. In the treatment of phthisical cases, though oysters, eggs, fish, cream, butter and many of the milder fats are beneficial, I have nevertheless found in my own practice, that a diet composed largely of animal food is the one best adapted for staying the progress of the disease or in the earlier stages for hastening the cure. In some phthisical cases in which the digestive organs were in healthy condition I have advised the ingestion, of large quantities of beef. mutton, fish, fowl or game. In some cases I have recommended the almost daily use of venison; in this aliment I include the flesh of the cariboo. In some cases wonderful results have been accomplished. By this method of treatment in one case occurring in a man aged thirty-two years, I was able to check the disease and to do much toward effecting cicatrization of the lung tissue, even after the occurrence of repeated attacks of profuse hæmorrhage and after a large cavity had formed in the superior lobe of the left lung. At the time I commenced the treatment the patient was in very feeble condition; he was expected to live only a very short time. By means of the treatment persistently carried out he survived for fifteen years. The patient died at the age of forty-six years, of double pneumonia which lasted but a few days; the fatal attack was brought on by a prolonged exposure during the season of influenza in the month of January, 1889. Autopsy revealed an extreme atrophy and contraction of the upper lobe of the left lung; much of the lung tissue of that portion had disappeared. The left bronchus was dilated; there was still the remains of a cavity into which small pockets opened. The lower portion of the left lung was fibrous and contained but few air vesicles. The cavities opening into the bronchial tube were lined by a secreting membrane. Some fluid was found in each of these cavities. The left lung had been in great measure rendered useless. The right lung was enlarged. All the lower portion was heavily congested, presenting the early stage of acute pneumonia. On the right side above there was only a limited portion which was pervious to air, This condition of the lungs during the last hours of life was the cause of the extremely rapid respiration, which varied from forty to eighty per minute. Both lungs were densely adherent. The heart was enlarged and dilated. The cardiac valves were, however, normal. The kidneys were healthy; the liver was enlarged, but otherwise healthy; the spleen was normal, so also were the intestines and stomach. The patient had from time to time expectorated large quantities of catarrhal and purulent exudation. Before the fatal attack the patient had been gradually improving. The sputa which I examined according to the method of Professor Koch, of Berlin, revealed but few characteristic bacilli tuberculosis. The otherwise good condition in which the patient had been kept by the rich and nourishing food prescribed, finally overcame essentially the influence of the bacilli, or at least prevented them in large measure from gaining entrance into the system. In this connection I should say that the patient's condition was not left wholly to the influence of dietetic treatment; his urgent symptoms often demanded prompt administration of the most effectual remedial agents. I am confident, however, that the great success in his case would not have been achieved unless the special attention had been paid to the consideration of dietetic measures. In prescribing a diet, consisting so largely and generously of flesh, much study and consideration should be given in determining in any case the soundness, capability and endurance of those organs which are concerned in digestion and in elimination. The condition of the kidneys above all should from time to time be inquired into. The autopsy in the case here reported shows that the kidneys though heavily worked remained sound until the last.

The enlargement of the liver, which in this particular case acted as a diverticulum was rather the result of a conservative process than as a pathological one. The enlargement of the heart was by no means found to be a serious complication; it occurred doubtless in consequence of the excessive work which that organ was called upon to perform in propelling the blood through the affected pulmonary tissue; this increased action of the heart was fast accommodating itself to the new order of things. Judging from the whole history of the case from its inception until its close it is evident that the most liberal and nourishing diet which had been advised and which the patient was so well able to bear, would, had he not suffered from the accidental exposure, have resulted in a restoration to health or would have prolonged his life to many more years of usefulness and enjoyment. As it did result the patient had been enabled during the years while under my care to achieve by honorable mercantile pursuits a substantial fortune for the maintenance of his family. The dietetic treatment best adapted for phthisical cases can accurately be determined only by a careful consideration of each of the several factors present in any individual case.

In some cases milk is a most useful article of diet; sometimes it may be taken cold, and even in large quantities. Some patients, however, are unable to take milk in this way; such patients may take milk if given in small quantities when given at the temperature 100° F. or at a temperature somewhat above that point. Peptonized milk can often be taken with advantage; eggs, fish, fowl will sometimes prove to be most nourishing articles for the phthisical patient. In cases in which there is but little tendency to diarrhœa, I have found green vegetables of much service. In the treatment of phthisical cases, in which the greatest success however, is to be expected my experience proves that articles of diet largely nitrogenous in character must be ingested. In carrying out the treatment for this latter class the carbohydrates embracing oleaginous and fatty substances may to a certain extent be added; at intervals more or less remote those articles formerly classed as feculaceous in their immediate principles may not unadvantageously be employed.

A HARD STATE TO PRACTICE IN.—The Alabama State Medical Examining Board rejects 41.16 per cent. of candidates who apply for license.

EPITHELIA.

Read by Title in the Section of Physiology and Dietetics, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY EPHRAIM CUTTER, M.D., LL.D.,

OF NEW YORK.

These are morphological elements of mucous, synovial and serous membranes, and take their name from epi, upon, and tithemi, to place, and mean placed upon.

They are cells with protoplasmic contents. There are three kinds as to shapes: 1. Pavement. 2. Cylinder. 3. Ciliate.

Their seats are as follows:

Pavement or Tessellated Epithelia.—Besides the above named seats they are found upon the skin, hair follicles, nails and toe matrices, on the membranes of the aqueous protoplasmic humor, the choroid, the capsule of the lens, the retina, the conjunctiva of the ball of the eye, the cavity of the tympanum, the lower half of the pharynx, the œsophagus, the endocardium, some veins, the capillaries, all glands and ducts. the vagina and female urethra, the bladder, uterus, kidneys, pelvis and tubules.

In the arteries and many veins they are spindle-shaped.

Cylinder Epithelia.—In mucous membranes, in Lieberkuhn's follicles, all the ducts of the glands of the alimentary canal, in the lachrymal and the mammary glands, the male urethra, the vas deferens, the vesicular seminales, the prostatic ducts, the Cowper's and uterine glands.

Ciliated Epithelia Seats.—The larynx, trachea, bronchi, nares, pharynx above the level of the base of the nasal bones, the antra, the frontal sinuses, the inner surface of the membrana tympani, the Eustachian tubes, the uterus, the Fallopian tubes, the lachrymal sacs, nasal duct, palpebral conjunctiva—or that which is on the under surface of the eyelids and ependyma (Micrographic Dictionary). This list is complete enough for our purpose. Never does a human being wash hands or body, defecate, urinate, vomit, expectorate, sweat, bleed, conjugate or rub the body surface, unless there is a separation of multitudes of epithelia from that body. Hence we may infer that epithelia have a prodigious part to play in the physiology of the human body.

Shapes.—These have been indicated already, but besides the pavement, cylinder and ciliated cells, there are the caudate, spindle-shaped, hexagonal, oblong, lozenge-shaped. The situation varies the shape. For example, in the liver they are found hexagonal.

Contents.—Independent of their products, clear and structureless protoplasm, that first plastic material which is the basis of all the organized tissues and products in the human body. Protoplasm is a field on the confines between man and God the Creator. Man cannot tell why one cell secretes bile, another milk, another wax, another fat, another pigmentine, any more than he can tell why gold is yellow or silver white, or air is blue.

Those who believe in God explain these differences of protoplasm, metals or air, by referring them to the will of God. Those who say they are so by nature mean the same thing, as the word "nature" implies something born from "God" as a source of birth. Those evolutionists who deny God, I believe, have not explained the reason why epithelial protoplasm is so varied in its production according to the needs of the body and being evoluted by those needs. Needs do not always develop the means of supplying these needs, as taught by evolutionists. If so, there would be no protested notes, no one would starve for want of food, nor drown for want of air; no babies would die for want of good *breast-milk*, the product of epithelial protoplasm.

Autonomy.—Epithelia have an independent existence over the other tissues of the body. They will take up some substances and refuse to take up others, thus showing the power of election. To be sure this is seen in inorganic substances, as in chemistry. They exist after death of the body, or after separation from the body. Ciliated epithelia will long wave after death of the body systemic.

Surgery has taken advantage of this autonomy by the process of skin grafting, whereby skin epithelia are clipped from the sensitive body, causing hard pain and sacrifice. The method of skin grafting originated by Dr. C. B. Kibler, of Corry, Pa., shows still more prominently the autonomy and stability of dermal epithelia. He scrapes off the epithelia from the palmar surfaces of hands and feet and from callouses, keeps them dry an indefinite time ready for use, and finds that they are as good as the epithelia from sensitive skin; their vitality is like that of teeth. It is hoped that there will be no more useless martyrdom in skin grafting after this.

Those who study the morphology of potable waters know how abundant epithelia are. While they are not all human, some of them must be, and their vitality must be great to stand the continued soaking they get and to resist decomposition.

Another evidence of epithelia autonomy is in the secretions. We have alluded to the bile and milk epithelia. Besides these are wax, fat in its varied forms, sweat, mucus, urinary liquids, salts, pancreatic, gastric and intestinal juices, to name no more, and these are originated by the epithelia from the blood; and to repeat, man knows no more how these secretions are made than he knows the process of decomposing carbon dioxide gas, the evolution of oxygen, the appropriation of carbon, the production of resin, balsam and oils, going on in the leaves of the trees right under his eyes and over his head. Some time man may know the secret, but it will be some time yet. But for these different products of epithelia, life could not go on.

The mechanical functions of ciliated epithelia show autonomy also by removing secretions from their sites, because the power is applied towards the outlet. Otherwise, for example, the lungs would be clogged; this would happen if the epithelia forced the secretions towards the terminal tubes and air cells, and death would result. Dr. B. W. Richardson, of London, gives in the *Asclepiad* a graphic account of "Default of ciliary action" in the air cells, or rather air passages, especially during fogs moist and dry. He says ciliary action runs with age; most active in youth, good in middle age, and probably ceases altogether in very old age. The morphology of the air is well collected by the ciliated epithelia of the air passages, and is included in the morphology of the sputum. Those who live in cities are little aware of the immense amount of material there is in the atmosphere coming even from meteoric bodies, volcanoes and coal dust, and frequently from other worlds.

The ciliated epithelia of the nares are very useful to clear the respired air of these passing bodies. Now the motion of the cilia is something marvellous; it is protoplasmic. Muscular motion is protoplasmic, as the automobile motion of the bodies of the bacteria of fermentation or of monads which act on diatoms, for example, as tugs do on ships. As we refer the motion of bodies celestial and terrestrial to the power of the Creator, so must we see in the said motion of cilia towards the outlet of their cavities only another evidence of His marvellous work. Certainly ciliary motions are those of vital energy. It has been said by another that epithelia grow by feeding, organize their food into new epithelia and secretions, throw off fæcal matter, and that their work is independent, like an individual organism. Another has also broadened this idea, that the intense disturbance that comes in disease to epithelial cells is a cause of rise in temperature, *i. e.*, fever. I think there is great truth in this view. Certainly epithelia have a tremendous work to do to cast out offensive or noxious substances, and if they are automatic, is it unreasonable to suppose that they get excited and hot in those efforts, just as one would in trying to expel an intruder from home at night who does not want to go until he has done his mischief and stolen his prey.

Effect of Nerve Forces on Secretions.—The effects of the nerves on epithelia are wonderful. Some mothers think that their breast milk is formed while they are suckling. If this is so, the epithelial activity must be something marvellous.

Tulchen.—The Dutch kill a calf and stuff its skin so as to resemble the live animal. This is called a "tulchen," and is placed while the mother is milked just so that she can see it in a position of suckling; the result is that she lets down her milk and a larger quantity is obtained than otherwise would be. Maternal affection thus influences the production of milk and hence influences the work of the protoplasm of the epithelial cells. In India this tulchening has been done for ages, as a late authority states.

A Cow's Jealousy.—Mr. C. H. Brown, in *The London Spectator*: "A few years ago I had a quiet milch-cow, 'Rose,' which certainly was fond of Thomas, the man who milked her regularly, and she also showed an aversion to dogs even greater than is usual in her species. One night, for what reason I now forget, I had tied up a young collie dog in the cow-shed where she was accustomed to be milked. The following morning I had just begun to dress when I heard the puppy barking in the cow-shed. 'Oh,' thought I, 'I forgot to tell Thomas about the puppy, and now the cow will get in first and gore it.'

"The next minute I heard a roar. I dashed down to the spot, and at the same moment arrived my son, pitchfork in hand. There lay Thomas on his face in a dry gutter by the side of the cow-shed, and the cow butting angrily at him. We drove off the cow and poor Thomas scuffled across the road, slipped through a wire fence, stood up and drew breath. 'Why Thomas,' said I, 'what is the matter with Rose?' 'Well, sir,' said Thomas, 'I heard the pup bark and untied him, and I was coming out of the cow-house with the pup in my arms when Rose came around the corner. As soon as she see'd the pup in my arms she rushed at me without more ado, knocked me down and would have killed me if you hadn't come up.' Thomas had indeed had a narrow escape his trousers were ripped up from end to end, and red marks all around his legs showed where Rose's horns had grazed along them. 'Well,' said I, 'you had better not milk her this morning, since she is in such a fury.' 'Oh! I will milk her right enough, sir, by-and-by; just give her a chance to settle down like. It is only jealousy of that ere pup, sir. She could not abide seeing me a-fondling it.'

"Well, as you like,' said I, 'only take care and mind what you are about.' 'All right, sir.' In about twenty minutes Thomas called me down to see the milk. The cow had stood quiet enough to be milked. But the milk was deeply tinged with blood, and in half an hour a copious red precipitate had settled to the bottom of the pail. Till then I doubted the jealousy theory. After that I believed."

As there is no Section of Pathological Anatomy in this Association, it may not be out of place to briefly sãy that dermal epithelia are invaded by vinegar yeast in consumption. Specially they are invaded in small-pox, measles, scarlet fever, diphtheria, etc.

Epithelia degenerate into fat in Bright's disease of the kidneys.

As said by another, they may also be paralyzed or made drunk, as it were, by carbon dioxide gases, so that they do not distingush as in the natural state, and they take in noxious substances which are transmitted into the lungs, for example in consumption. First there is consumption of the bowels, and next follows consumption of the lungs. In cases where the epithelia refuse the passage of the mycoderma aceti or vinegar yeast, the case remains consumption of the bowels. This is the most clear explanation I know, of consumption of the bowels.

Epithelia are extensively thrown off in Asiatic cholera, as I early observed, in all stages of formation, and perhaps this explains the great prostration in those cases.

Deformed Epithelia.—There is no doubt that epithelia are deformed, and that very little notice of this feature has been made. But there is a relation of deformed ciliated epithelia to grippe which is an important one, for it is widespread over the globe, and for its severity specially in complicating other diseases, as lung fever, bronchitis, pleurisy, etc. To be sure some take the view that the forms called by the great majority of physicians deformed ciliated epithelia are not epithelia at all, but are cilio flagellated infusoria which infest the air passages in grippe, and make under the microscope one of the most beautiful and wonderful displays of protoplasmic life to be seen.

So long as man is infected by animal parasites, as tænia, scabies, guinea worms, ticks, lice, microbes, etc., it is nothing strange to have them infected by an infusorium which is communicated through the air from man to man. But concede this to be only deformed ciliate epithelia, then the following things must be explained:

1. Why is it that when grippe patients are found with thirty to forty living and moving forms, which my critics call deformed ciliated epithelia, in the excretions of the air passages, they suffer so much from nasal, pharyngeal and laryngeal irritation, coughing, sneezing and expectorating freely, with flushed countenances looking like lung fever, and yet when the fumes of burning sulphur, nascent chloride of ammonium or atomized benzoate of soda are haled, great relief is afforded in a few moments? Then why, on examining the excretions, are the forms found dead and motionless?

2. Are we then to infer that deformed ciliated epithelia alone are sources of irritation alive, but dead they are not sources of irritation? If so, then there is a new law that dead tissues do not irritate, but live ones do, contrary to common sense.

3. If I find a man sick with incessant coughing, which has resisted all medication; if the expectoration shows what my critics call deformed ciliate epithelia protoplasm in action; if I present burning sulphur and if I find the cases cured thereby, am I to infer in these cases also that live tissues irritate, and when dead do not?

4. I have stated that I did not know that ciliated epithelia were found in the ocular conjunctiva; but they have been found in the palpebral or eyelid conjunctivæ. Still I think it is possible that all the forms found were not ciliated epithelia, after making this allowance.

Stomata.—These stomata were beautifully shown in the microphotos of the late Surgeon Woodward, U. S. A. These are openings between the endothelia of capillaries and veins. In inflammation they open and allow the migration of white corpuscles, which have a habit of breaking up into two, three, four, five or six parts and then reuniting. When escaped outside the blood-vessels they coagulate in a collection, forming what we call abscesses.

The stomata must play an important part in inflammation by affording egress to the white corpuscles, though in health it is thought doubtful if there is any such egress. In this the animal differs from the vegetable stomata, as found in leaves, which afford ingress for carbonic acid gases from animals, and egress to the oxygen into the atmosphere to us.

Hair and Nails.—The epithelia of the skin take curious modifications in the production of hair and nails. The vitality of hair is wonderful and lasts after death for a long while. I once saw a man place the hair of his daughter's head, who had been buried for ten years and was exhumed for a new cemetery lot, on the top of a common flour barrel and it reached to the floor. I was told that in her last sickness her hair had been cut short. This positive instance, it seems to me, settles the question of hair growing after death, in this case at least. After this I was prepared to believe that the horses and men who had been killed in battle, buried in a trench and exhumed by an earthquake in Chili, had had the hair grow after death.

The fact that hair varies in the sexes shows a wonderful control of epithelial power on the part of our Creator. So the nails are constantly being reproduced by the epithelia of the matrices at the root of the nails, and all the time under our eyes forming compact, dense, transparent-like bodies much like the cornea, for a useful purpose just when they are needed. They are one of the best tests of the nutrition of the body. If thin, ridged with longitudinal furrows or with deep transverse furrows, you may be sure that something has interfered with the body nutrition, or you may be dealing with a case of syphilis acquired or inherited.

When the free ends of the nails are bent downward or clubbed you are to look for some obstruction to the circulation in the chest. A round, smooth, naturally symmetrical set of nails shows good nutrition. I am not quite sure but those who profess to read character by the inspection of hands include the nails in their physical explorations.

Spermatozoa.—Kolliker teaches that spermatozoa are produced in epithelial cells. If so, this caps the climax of physiological use of an epithelial cell.

The spermatozoa furnish the most lively example of protoplasmic motion in the human body. A microscope slide filled with live spermatozoa is one of the most wonderful sights on earth. The motions are so active, positive and automatic. When it is considered that one spermatozoon will impregnate an ovum—that you and I each of us came into being through such a spermatozoon—that constitution and traits of character mental, physical, intellectual, moral, are seen to be transmitted from one father to a son, or it may be from a grandfather or great-grandfather—it must be confessed that it surpasses our ability to comprehend how that so small a body as a human spermatozoon could transmit such features of distinction, so unmistakably. And then to think this comes through the medium of epithelial cells!

It seems to me that our subject furnishes material of interesting and profitable thought, and that the section of physiology offers a field which should be better cultivated than now. Far more profitable is it for us to be engaged in cultivating our mental powers, in sharpening our wits as physicians by making physiological subjects the objects of thought, rather than those of medical police and ethics.

I think it is noble and grand to realize how we live and move and have our being in our Creator, especially in the motions of ciliated epithelial cells, of spermatozoa and in the production of milk, bile, wax, sweat, fat, tears, urine, mucus, feces, and in which the epithelia play such an independent part

New York, May 30, 1892.

THE MEDICAL TREATMENT OF ACUTE TONSILLITIS AND PHARYNGITIS: A COMPARATIVE STUDY BASED ON ONE HUNDRED AND SIXTY-NINE CASES.

Read in the Section of Laryngology and Otology, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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The modern revival of therapeutics has been attended by the introduction of new remedies almost without number. It is a fair question to ask, how much have the latter benefited us? Are the new better than the old? We shall be gratified if we find that the new-comers, especially the synthetic compounds, have enabled us to cure more quickly, more safely and more agreeably than their predecessors.

It is to help answer one phase of this question that the present paper has been planned. Herewith are presented the results of treatment in one hundred and sixty-nine cases of acute tonsillitis and pharyngitis according to three distinct methods, or rather with three distinct drugs, together with some deductions which may rightly be drawn from this number of cases.

Under the title of "pharyngitis" reference is here made only to the various aspects of the catarrhal inflammations. Under "tonsillitis" are included the lacunar and parenchymatous forms of the disease, also peri-amygdalar cellulitis or quinsy. To the etiology, symptoms and possibly infectious properties of these different affections, no allusion is here made. The question is merely one of treatment.

Unfortunately, the most important factor in any therapeutic question is the most variable, viz.: the individual constitution. This renders it difficult to adopt any standard by which to judge of results attained in the employment of any remedial measure. The physician above all other men must bear witness to the truth of the old proverb that what is one man's food is another man's poison. An approximation will, however, serve us reasonably well. The most painful symptom of the maladies named is the discomfort, almost agonizing at times, in swallowing. Even here our estimate must be relative rather than absolute, for one man will be prostrated with an amount of pain which to his neighbor is a mere annoyance. The extremes may be used to balance each other. When our patients are able to swallow again with ease, the battle is in their view already fought and the victory won. It is therefore with reference to the removal of this symptom that the results hereinafter named are to be studied.

No one realizes more than the writer our tendency to generalize from insufficient data. He has therefore waited till the number of cases should become sufficiently large, and considerable confidence is felt in the results here given. Over-sanguine anticipation frequently prejudices us in favor of a new remedy. Figures must have some size, therefore, to be considered as perfectly trustworthy.

Again, the doctrine of the self-limitation of most of the acute catarrhs must be reckoned with. If the curve of our alleged "cure" coincides with that of the subsidence of the disease, the most we can say is that we have made our patients' sufferings more bearable. We have not shortened their duration. Many of the cases of the nature alluded to complete their evolution in three days. In those peri-amygdalar cases going on to suppuration we rarely find pus before the fourth day. Undoubtedly any plan of treatment may frequently (not always) prevent a mild case from assuming a more severe form.

Concerning the method by which medicines cure those affections now considered we know but little. We know that various dyscrasiæ, the rheumatic, gouty, etc., stand in a causative relation to throat troubles, and that our approved remedies for these dyscrasiæ will relieve the local pathological state. Salicylate of soda will relieve a *rheumatic* angina as quickly as a rheumatic joint. So also will guaiac and salol. But it is manifestly true that many throat cases can in no wise be regarded as dyscrasic.

The material here studied has been drawn from private practice, from my own clinic at Demilt Dispensary, and from the out-patient department of the Roosevelt Hospital in the service of Dr. Jonathan Wright, whose courtesy I would here acknowledge. It comprises, as has been said, the records of one hundred and sixty-nine cases. I have probably seen as many more during the period covered by these cases (August, 1891, to May, 1892), but many of the latter did not return for a second treatment. The number recorded have been followed till cured, and in each instance I have heard from their own lips how many hours elapsed after treatment was begun before they felt relief.

It is evident that the cases must be grouped according to the time in the period of their evolution at which they were first observed. If we begin our remedial measures on the fourth or fifth day of a simple angina, the next day or the second day after are likely to witness an improvement, because now the malady is on the decline. Accordingly it makes a great difference how early in the disease we attack the pathogenic factor. Pursuant to this view, the cases with each remedy have been divided into three groups as follows:

1. Cases in which the remedy was begun on the first or second day of the disease.
2. Cases in which the remedy was begun on the third day of the disease.
3. Cases in which the remedy was begun after the third day of the disease.

The first remedy employed was salol. The literature of this drug has become very voluminous, there being now over one hundred articles extant in different languages. To the larger number of these I have had access, but only a very few of them bear upon the present question.

It is well known that salol is decomposed by an alkali into its two component parts, salicylic and carbolic acids. Sahle[1] asserts that this decomposition can be brought about by so weak an alkali as the saliva; also by dead organic matter and bacteria. Practically we find that the remedy passes through the stomach unchanged and is split up by the pancreatic juice. This negatives the idea of any local action on the throat tissues by contact. It also suggests the advisability of flushing out the duodenum previous to the exhibition of the remedy. In the various conditions of the duodenum, Lombard[2] finds an explanation of the varying results obtained with salol. Lepine[3] has found that by diverting the pancreatic flow in animals (while salol was being given) from the bowels, the remedy was found unchanged in the stools, nor did the urine give the reaction for either of its components. On restoring the normal flow, the reaction promptly appeared. Regarding its therapy he states (Ibid.) that as compared with salicylic acid and its salts in rheumatic affections, it simply relieves the pain while the sodium salicylate attacks the disease.

Herrlich[4] used the remedy in one case of diphtheria resulting fatally. The mode of administration is not given.

Gougenheim[5] gives a warm commendation to the drug in throat disease, having employed it in twenty-two cases. His conclusions are:

1. It acts beneficially in all forms of angina, whatever the cause.
2. It quiets pain and dysphagia with the greatest rapidity.
3. In quieting pain it may shorten the duration of a quinsy.
4. It lowers the temperature.
5. In nearly all cases it diminishes the duration of the angina.
6. To accomplish the results at least 60 grains must be taken in twenty-four hours.

Seifert[6] regards it as an effective mouth wash in ulcerative processes and in diphtheria. He used a dram of a 6 per cent. alcoholic solution to a glass of warm water for a gargle.

Georgi[7] considers that it has more effect than chlorate of potash in catarrhal and lacunar anginas.

Thorner[8] was perhaps the first in this country to use the remedy for throat disease. He gave from 10 to 15 grains three times a day, and found that patients were able to swallow with ease, sometimes after only two doses. In one case beginning as parenchymatous tonsillitis, pus had already formed in the periamygdalar cellular tissue. Fifteen grains of salol (incision having been refused) enabled the patient to sleep by aborting the pain. The next day the abscess opened spontaneously. Thorner does not regard the 6 per cent. solution of Seifert as having any special advantage over other antiseptics in faucial and pharyngeal ulcerations.

Katzenbach[9] regards it almost as a specific, but gives no details concerning its administration or the nature of the cases to which he considers it applicable.

Wessinger[10] has given the remedy in 5-grain doses every two hours. In one case of pharyngitis the soreness was relieved in twenty-four hours, in another in twenty-two hours, etc. Wessinger considers salol as a heat dissipator through vaso-dilatation and consequent diminished pyrexia.

Wright[11] gives an exhaustive history of the remedy and by far the most definite account of its action in throat disease. His tabulations show that in a series of fifty cases of simple tonsillitis and pharyngitis, where treatment was begun on or before the second day (twenty-one cases) relief was experienced on an average in seventeen hours; begun on the third day, fourteen cases in twenty-seven hours. After the third day, fifteen cases in twenty-four hours. In some instances complete failure is recorded. His conclusions are in accord with those of Gougenheim. The lacunar form seemed to yield most promptly. A careful study of Wright's figures is instructive on this point, that any remedy begun early has a chance of aborting the disease. If not begun till the latter is under full headway, its opportunities of doing good are much restricted.

Kenner[12] regards it possible to cut short with salol every attack if begun early enough. We do not believe this claim to be substantiated. He has given 90 grains daily without any bad result. His dosage was 10 grains every three hours. Iron chloride tincture has also been given.

Regarding its mode of action, Waugh[13] suggests that it may rival antipyrin as an anodyne. The general impression has been, however, that its effects were entirely due to its salicylic component, 66⅔ per cent. according to Tait.[14] Here again we are confronted by the question as to whether it is more powerful than its equivalent of the acid, and as to whether this increment of power, granted that such exists, is more than could be accounted for by its association with its phenol partner. Bartholow, in his Treatise on Materia Medica, has noted that the effects of salicylic acid are increased in all directions by its association with the phenol group. These and similar considerations are all suggestive, but we have to be guided in clinical work more by results than by *a priori* views.

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[1] Correspond. für Schwitz. Aertz., Nos. 12, 13, 1886.
[2] Phil. Times and Register, September 28, 1889.
[3] Jour. des Con. Med. Pract. Paris, p. 218, 1886.
[4] Deut. Med. Wochschr., No. 19, 1887.
[5] Annal. des Mal. de l'oreille, etc., No. 9, 1889.
[6] Int. Centralbl. f. Lar., Vol. iv, p. 114.
[7] Berl. Klin. Wochschr., No, 24, 1887.
[8] Cincinnati Lancet-Clinic, December 10, 1887.
[9] N. Y. Med. Jour., July 28, 1888 (Trans, New York Chir. Soc.).
[10] Med. Register, 1888, Vol. iii, p, 205.
[11] Amer. Jour. Med. Sci., August, 1890.
[12] New Albany Med. Herald, March, 1892.
[13] Phil. Med. Times, Vol. xix, p. 442.
[14] Pharm. Record, March 15, 1887.

Lombard,[15] in a careful study of salol, says that it lowers temperature and increases the rate of breathing while there is only a slight diminution in cardiac force, but none of these more subtile effects show any relation to its behavior in throat disease.

Personally I have used salol in eighty-one cases. The dose has been 5 grains every two hours in mucilaginous suspension. Capsules have been very unsatisfactory.

The cases in which the remedy has been begun on the first or second day of the disease number thirty-six, as seen in the following table:

TABLE I.—SALOL BEGUN ON THE FIRST OR SECOND DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours Before Relief.	Remarks.
1	M	38	Yes	. . .	Lacunar .	1	4	
2	F	22	Fam.	No	" . .	2	48	
3	M	35	. . .	. . .	Peritonsilitis . . .	1	No relief	Later, abscess burst, giving speedy relief.
4	F	6m.	No	No	Lacunar .	2	48	
5	F	27	"	"	Parenchy. .	2	20	
6	F	30	Yes	. . .	" . .	1	6	
7	F	27	"	No	" . .	2	12	Fresh attack four days later; relief in forty-eight hours.
8	M	39	No	"	Lacunar	2	12	
9	F	45	"	"	Parenchy. .	1	28	
10	F	28	Yes	Yes	" . .	1	No relief	Subject to bilious attacks. Throat relieved by a "bilous pill."
11	M	19	No	No	" . .	1	No relief	Scarlatina developed.
12	M	4	"	Yes	" . .	1	10	
13	F	11	"	"	" . .	2	16	
14	M	7	Fam.	No	" . .	2	6	
15	F	19	No	"	" . .	1	6	
16	M	21	"	"	Lacunar .	1	14	
17	M	26	"	Yes	" . .	2	36	
18	M	17	"	"	Acute Pharyngi's	2	8	
19	M	46	"	"	Parenchy. .	2	6	
20	F	32	"	"	Acute Pharyngi's	2	8	
21	F	19	"	"	Peritons .	2	6	Incision; no pus.
22	F	25	"	No	Sub-acute Pharyngi's	2	No relief	Iron and potash internally, and gargled; relieved in 12 hours.
23	F	29	"	"	Lacunar .	2	36	
24	M	13	"	Yes	" . .	2	48	
25	F	22	Fam.	"	Parenchy. .	2	10	
26	M	16	No	No	" . .	1	12	
27	F	27	"	Yes	Lacunar	1	12	
28	F	3	"	No	" . .	1	36	
29	F	17	"	Yes	Parenchy. .	1	No relief	
30	F	25	"	No	Lacunar .	2	6	
31	F	12	"	"	Parenchy. .	2	8	
32	F	16	"	Yes	Lacunar .	1	12	
33	F	25	"	No	" . .	2	6	
34	F	12	"	"	Parenchy. .	2	8	
35	F	3	"	"	Lacunar .	2	36	
36	F	17	"	Yes	Parenchy. .	1	No relief	

Average number of hours before relief, 12.

Six cases experienced no relief. The first was a periamygdalitis in which pus was probably present. It was spontaneously evacuated later, giving speedy relief by its exit. In the second the patient, a young lady aged 28 years, was subject to bilious attacks, and said that a "bilious pill" always relieved her sore throat quicker than anything else. In the third, the angina turned out to be the forerunner of a scarlatina. In the fourth a change of treatment to iron and potassic chlorate gave speedy relief. In the fifth and sixth cases, dead failure resulted with no mitigating circumstances.

The cases in which salol was begun on the third day of the disease number fifteen, with three failures.

The cases in which salol was begun after the third day of the disease number thirty, with four failures. In one case (No. 22) of the parenchymatous form, though the pain subsided in twelve hours, the throat continued to swell for some time. A similar occurrence has been noted by both Wright and Gougenheim.

TABLE II.—SALOL BEGUN ON THE THIRD DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours before Relief.	Remarks.
1	F	27	No	No	Parenchy.	3	44	
2	F	28	"	"	Lacunar	3	21	
3	F	26	Yes	. . .	"	3	8	
4	M	33	fam.	No	Peritons.	3	8	Incision; no pus.
5	M	4	No	"	Parenchy	3	21	
6	M	10	"	"	"	3	36	
7	M	19	"	Yes	Peritons.	3	8	Incision; no pus.
8	F	21	"	"	Parenchy	3	20	
9	F	13	"	No	Lacunar	3	12	
10	M	7	Yes	Yes	Parenchy	3	12	
11	M	19	No	"	"	3	failure	
12	F	22	"	"	"	3	. . . .	
13	M	7	Yes	"	"	3	12	
14	M	19	No	"	"	3	failure	
15	F	22	"	"	"	3	. . . .	

Average number of hours before relief, 11.

A word or two must be said about the poisonous effects of salol. In my eighty-one cases no unpleasant effects were observed. The urine was examined in several instances and always showed a dark color suggesting carboluria. On testing it gave the reaction for salicyluric acid, the form in which the salicylic element is probably excreted. Tinnitus has been observed in a few cases but never to an uncomfortable extent. The authetic cases of salol poisoning are really very few in number. Two or three have been observed where the dosage has not exceeded sixty grains in the twenty-four hours. Church[16] gave to a typhoid patient five grains every four hours. On the third day of this dosage the patient was restless, had a herpetic eruption on the upper part of the trunk down to the level of the tenth rib. A discontinuance of the drug and the application of a carbolic ointment relieved the condition in four days.

TABLE III.—SALOL AFTER THE THIRD DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours before Relief.	Remarks.
1	M	38	Yes	Yes	Peritons. . .	4	14	Incision; pus.
2	F	40	. . .	. . .	Lacunar . .	4	6	
3	F	16	fam.	Yes	Parenchy. .	5	No relief	Iron and potash gave [prompt relief.
4	F	10	No	No	Acute Phar. .	5	24	
5	M	17	"	"	Parenchy. .	6	48	Acute laryngitis.
6	F	27	"	"	Sub-ac.Phar.	8	48	
7	F	16	"	"	Peritons. . .	7	8	
8	M	23	"	Yes	" . .	8	No relief	Incision; no pus.
9	F	18	"	"	Parenchy. .	21	6	
10	M	20	"	No	" . .	7	10	
11	M	10	Yes	"	Lacunar . .	4	11	
12	F	16	No	"	Ac. Phar . .	4	6	
13	F	42	"	"	Parenchy. .	4	10	
14	F	52	Yes	. . .	Peritons. . .	7	6	
15	M	27	"	Yes	" . .	5	28	Incision; pus.
16	F	23	fam.	"	" . .	5	14	Incision; no pus.
17	F	2	No	"	Parenchy. .	21	60	Post-nasal adenoids.
18	F	12	"	No	" .	14	21	
19	F	14	"	"	" . .	7	12	
20	F	10	. . .	. . .	" . .	4	16	
21	F	11	No	No	" . .	7	18	
22	M	29	"	"	" . .	4	12	Swelling increased after [subsidence of pain.
23	F	10	"	Yes	" . .	1	16	
24	F	11	"	"	" . .	7	18	
25	F	29	"	"	" . .	4	16	
26	M	21	"	No	Peritons. . .	4	No relief	Incision; pus; latter re-[accumulated.
27	M	41	"	"	Acute Phar. .	7	48	
28	M	5	fam.	"	Lacunar . .	21	8	
29	M	21	. . .	. . .	Peritons. . .	4	No relief	Incision; pus.
30	M	11	No	No	Acute Phar. .	7	48	

Average number of hours before relief, 18.
Average of all the salol cases, 14⅓.

Demme has observed urticaria in one case after a clyster of two grammes, but in a somewhat extensive use of this quantity daily by the mouth had no other case of poisoning. It is without the province of this paper to go into details of salol poisoning. Suffice it to say that in a mild degree gastro-intestinal irritation is the leading feature. In more profound cases there are evidences of renal disturbance. All agree that the carbolic factor is the real damaging agent. Fatal results are not unknown. Derignac[17], Aufrecht,[18] Hesulbach,[19] Cartaz,[20] Morel-Lavalle,[21] Josefowitsch and Chlapowski have all made contributions to the literature of the drug's toxicology. One writer goes so far as to say that he regards it imprudent to give salol without at the same time giving its antidote sulphate of soda.

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[15] Bull. gen. de Therapie, Paris, No. 16, 1887.

[16] N. Y. Med. Record, March 3, 1880.

We need not be at all disturbed by the slight coloring of the urine which will result from the daily dosage of sixty grains.

The second remedy employed was guaiac. It was first suggested for tonsillitis by Sir Thomas Watson. Its reputation for the relief of rheumatic manifestations is as old as guaiac itself. Hence came its early employment in all throat conditions regarded as the expression of the rheumatic diathesis. Edes,[22] credits it with the power to absort peritonsillar inflammations but regards it as without any specific action the lacunarform.

TARLE IV.—GUAIAC BEGUN ON THE FIRST OR SECOND DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours before Relief.
1	F	10	Yes	Yes	Parenchy.	1	6
2	M	26	No	"	"	1	6
3	M	3	fam.	No	"	1	21
4	M	19	Yes	Yes	"	2	48
5	M	51	No	. . .	Peritons.	2	8
6	M	29	"	No	Acute phar.	2	21
7	M	12	"	Yes	Parenchy.	1	24
8	F	14	"	. . .	Lacunar	2	4
9	M	45	"	No	Acute phar.	2	21
10	M	8	"	"	Lacunar	1	No relief
11	M	10	fam.	"	"	1	20
12	F	12	Yes	Yes	Parenchy.	1	8
13	F	21	"	"	"	1	6
14	F	19	No	No	Lacunar	1	40
15	F	16	"	Yes	"	1	No relief
16	F	19	"	"	"	2	36
17	F	10	"	"	Peritons.	1	36
18	M	18	fam.	"	Lacunar	2	4
19	F	18	"	"	Parenchy.	2	36
20	F	7	"	No	"	1	20

Average number of hours before relief, 18.

My own cases number forty-four. The first group comprises twenty cases; treatment begun on the first or second day of the disease. The preparation employed was the ammoniated tincture in dram doses in hot milk every two hours.

TABLE V.—GUAIAC BEGUN ON THE THIRD DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours before Relief.	Remarks.
1	M	30	No	Yes	Parenchy.	3	12	Acute phar. also.
2	F	13	Yes	"	"	3	48	
3	M	1½	No	No	Acute Phar.	3	24	
4	M	17	"	"	Peritons.	3	18	Pus discharged before [treatment.
5	F	10	"	Yes	Parenchy.	3	12	
6	F	22	"	"	"	3	38	Acute faucitis.
7	F	4	fam.	No	"	3	48	
8	M	67	"	Yes	Peritons.	3	No relief	Took medicine only 8 hrs.
9	M	20	No	"	Parenchy.	3	"	Tonsils became more [swollen.
10	M	21	"	No	"	3	36	

Average number of hours before relief, 23½.

In one case the remedy caused an acute exfoliative dermatitis. In two cases failure is reported and both went on to periamygdalitis.

The second group comprises ten cases.

Here also two failures are recorded, in one of which the patient grew distinctly worse in spite of the remedy.

The third group (treatment begun after the third day) embraces fourteen cases.

TABLE VI.—GUAIAC BEGUN AFTER THE THIRD DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours before Relief.	Remarks.
1	F	26	No	Yes	Parenchy.	4	12	
2	F	10	"	"	"	. .	10	
3	F	19	fam.	No	"	7	4	
4	M	20	No	Yes	Peritons.	5	No relief	Incision; pus; well in 4 [days.
5	M	21	"	"	Lacunar	4	12	
6	F	17	"	"	Peritons.	7	8	Incision; no pus.
7	M	37	Yes	"	"	7	No relief	Incision; pus.
8	M	19	No	"	Acute Phar.	. .	4	
9	F	19	"	"	Parenchy.	5	66	After 48 hours had become [peri-amygdalar.
10	F	21	. . .	. . .	Peritons.	5	No relief	Incision; pus; latter re-
11	F	21	No	No	"	7	4	" " [formed.
12	F	30	"	Yes	Parenchy.	7	No relief	
13	M	32	Yes	No	"	28	24	
14	F	11	"	"	"	4	8	

Average number of hours before relief, 11.
Average of all the guaiac cases, 17⅓.

Failure is here recorded in four cases. In one case pus was present but reformed after incision. One case of the parenchymatous form ran on to the peritonsillar but was finally relieved in sixty-six hours without suppuration.

Certain disadvantages of guaiac claim a brief attention. It is an extremely disagreeable remedy to take. Sajous' method of using a menstruum of hot milk does but little to lessen this unpleasant feature. S. Solis Cohen[23] highly extols the compound guaiac gargle made as follows:

Take ʒij of chlorate of potash, dissolve in hot water and set aside. Then take a ℥vj bottle, put in it ʒvj of clarified honey, and smear the sides of the bottle with it, shaking it well. After this add, teaspoonful by teaspoonful, shaking well after each additional spoonful, compound tincture of chinchona fʒij, and ammoniated tincture of guaiacum fʒij. To this solution add gradually the chlorate of potash which has been set aside, shaking the mixture thoroughly, and to this add water q. s ad ℥vj. Every half hour, or hour, or two hours, the patient should gargle or bathe the throat with a teaspoonful of this solution. Every two hours let him swallow a half teaspoonful or a teaspoonful.

Cohen found that if begun early it would relieve most cases in a few hours.

Potsdamer[24] corroborates these results obtaining in one case of a series of nine, relief in six hours, and in all by the third day.

The third remedy employed was salicylate of soda in five grain doses in solutions every two hours.

Several of the sodium salts have long enjoyed a good reputation for alleviating throat troubles. Many continental authors recommend the simple bicarbonate locally applied. Boisliniere[25] treated seventy-five cases with sodium benzoate and found that pain was relieved in from twelve to thirty-six hours, truly a remarkable showing. Favorable reference to the salicylate is frequently found. Hunt[26] found his cases relieved on an average in twenty-four hours. Mackay[27] and Hormadge,[28] also commend its use. In fifty-seven cases treated by the latter none were even threatened with suppuration. The pain was nearly gone the next day and swallowing was easy.

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[17] Le Limousin Medical, Oct. 9, 1891.
[18] London Lancet, May 23, 1891.
[19] Fortschr. der. Med. Vol. viii, p. 453.
[20] Revue de Laryngol. No. 16, 1891.
[21] Archiv. de Laryngol. June 1891.
[22] Handbook U. S. Pharm., 1880, p. 146.

[23] Phil. Med. News, Vol. xliii, p. 146.
[24] Med. and Surg. Reporter, Vol. I, p. 69, 1884.
[25] St. Louis Courier Med., Feb. 1888.

My own cases number forty-four. The first group comprises fifteen.

TABLE VII.—SODIUM SALICYLATE BEGUN ON THE FIRST OR SECOND DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Sore Throat.	Diagnosis.	Day of Disease.	Hours before Relief.	Remarks.
1	F	13	No	No	Lacunar . .	2	60	
2	F	8	fam.	Yes	Parenchy. .	2	18	
3	M	20	"	"	Acute phar. .	2	No relief	Hot soda gargle relieved in 12 hours.
4	F	30	Yes	"	" . .	1	72	
5	F	19	No	No	Lacunar . .	2	36	
6	M	33	"	"	Ac. pharyng.	2	12	
7	F	22	"	"	Parenchy. .	2	21	
8	F	23	Yes	Yes	" . .	1	24	
9	F	21	No	"	Lacunar . .	1	None	Grew worse after 18 hours.
10	F	23	Yes	"	" . .	1	36	Sub-acute pharyngitis.
11	M	18	No	No	Parenchy. .	2	36	Acute pharyngitis.
12	F	17	"	Yes	Peritons. . .	1	12	
13	M	17	fam.	"	Acute Phar. .	2	16	
14	M	22	No	No	Parenchy. .	2	4	
15	M	16	"	"	Peritons. . .	1	8	Incision; no pus.

Average number of hours before relief, 24.

Here again two complete failures are chronicled. In one, a hot bicarbonate gargle afforded relief in twelve hours. The second grew steadily worse for two days, and was then lost sight of.

The second group embraces twelve cases.

TABLE VIII.—SODIUM SALICYLATE BEGUN ON THE THIRD DAY OF THE DISEASE.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours before Relief.	Remarks.
1	F	26	Yes	No	Acute phar. .	3	20	
2	F	31	No	Yes	Parenchy. .	3	18	
3	F	57	"	No	Peritons. . .	3	No relief	Incision 2 days later; pus.
4	F	30	fam.	"	Lacunar . .	3	24	
5	F	20	. . .	Yes	parenchy. .	3	20	
6	F	8	No	. . .	" . .	3	4	
7	M	39	"	Yes	" . .	3	36	
8	M	22	"	"	Peritons. . .	3	24	Incision; no pus.
9	M	24	"	No	" . .	3	12	
10	F	31	"	"	. . . .	3	No relief	Iron and potash relieved in 12 hours.
11	F	36	"	"	Parenchy. .	3	36	Also acute pharyngitis.
12	F	37	"	Yes	Peritons. . .	3	8	Incision; pus.

Average number of hours before relief, 17.

Of the two failures, pus formed in one after two days. A second obtained speedy relief from the iron and potash gargle.

The third group comprises seventeen cases.

Six failures are here recorded. One was quickly relieved by a hot bicarbonate of soda gargle, and a second by iron and potash internally. In the other cases of failure nothing of special interest is recorded.

To summarize, then: Out of 169 cases 81, or 48 per cent. treated by salol, experienced relief on the average in $14\frac{1}{3}$ hours; 44, or 26 per cent. treated by guaiac, in $17\frac{1}{3}$ hours; 44, or 26 per cent. treated by sodium salicylate, in $18\frac{1}{2}$ hours. The preference, therefore, is in favor of salol.

One therapeutic suggestion mentioned by Routh[29] is worthy of note. He believes that if salicin (with which he has treated many cases), is continued for a week or so after the subsidence of the acute symptoms, it will prevent the chronic hypertrophy of the tonsils which we so often observe as a sequel of repeated attacks.

It is pertinent here to consider what bearing this mass of clinical material has on what we may call the rheumatic aspect of sore throat. No small number of authorities regard throat troubles of the nature described as always a manifestation of the rheumatic diathesis. This is an extreme view and one not, I think, upheld by facts. It is manifestly a begging of the question to assert that this is always so in the case of first attacks. In my own cases, this point has been carefully inquired into, and a definite answer obtained in all but seven. Dividing then the remaining 162 cases into rheumatic and non-rheumatic groups, we find forty-seven, or 29 per cent., in the former, and 115, or 71 per cent., in the latter. In the former are included all in which there has been either a personal rheumatic attack, a family history of rheumatism, growing pains, or any other of the composite features of the disease. These figures differ somewhat from those of Haig Brown,[30] who found that out of 119 cases, twenty-eight had rheumatic pains, thirty-eight rheumatism, and ten had had rheumatic parents—that is, seventy-six, or 64 per cent., had some rheumatic tendency. Fowler[31] believes that it will be found that 80 per cent. of all cases of rheumatism have had previous sore throats.

TABLE IX.—SODIUM SALICYLATE BEGAN AFTER THE THIRD DAY.

Case.	Sex.	Age.	Previous Rheumatism.	Previous Throat Disease.	Diagnosis.	Day of Disease.	Hours before Relief.	Remarks.
1	F	21	No	Yes	Peritons. . .	11	12	Incision; no pus.
2	F	23	"	"	Acute phar. .	4	Failure	Soda gargle relieved.
3	M	29	fam.	"	" . .	5	12	
4	F	39	"	"	Peritons. . .	. .	No relief	
5	F	22	"	"	Sub-ac. phar.	4	21	
6	F	21	No	"	Acute phar. .	7	12	
7	M	20	fam.	No	" . .	7	36	
8	M	20	No	"	" . .	7	No relief	
9	M	32	. . .	Yes	Parenchy. .	8	48	
10	F	30	fam.	"	Lacunar . .	4	No relief	
11	M	26	No	"	Peritons. . .	4	48	Incision; no pus.
12	M	25	fam.	"	Parenchy. .	4	21	
13	F	15	Yes	"	Peritons. . .	5	12	
14	M	21	No	"	" . .	8	21	
15	F	28	"	"	Acute phar. .	10	8	Acute lingual tonsillitis.
16	F	10	"	No	Parenchy. .	5	None	Iron and potash relieved.
17	M	28	. . .	Yes	Peritons. . .	4	"	Incision; no pus.

Average number of hours before relief, 15.
Average in all sodium salicylate cases, $18\frac{1}{2}$.

I cannot help believing that in many of these cases, a previous rheumatic history is merely a coincidence. This view receives a certain confirmation in the therapeutic results reached in the rheumatic and non-rheumatic cases respectively. Thus in the forty-seven cases of the former group relief averaged sixteen and one-half hours, while in the 115 cases of the latter group, the average was a trifle over seventeen hours—practically the same.

My views, therefore, in regard to the treatment of acute simple sore throat of the varieties alluded to, may be summarized as follows:

1. I believe that in salol we have a remedy which, in the vast majority of cases, will give relief quicker than any other. Occasionally it utterly fails. Where it does so, I have found that iron tincture with potassic chlorate seems to be the best substitute. It is my conviction that this latter combination finds its best field in those patients who have already had many previous attacks, and in which there is more or less of an interstitial deposit of connective tissue in the mucous membrane. Salol is to most patients

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[26] London Lancet, Vol. I, 1882, p. 391.
[27] British Med. Jour. Oct. 4. 1892,
[28] Lancet, June 10, 1882.
[29] London Lancet, March 18, 1882.
[30] Brit. Med. Journal, September 12, 1888.
[31] Lancet, December 11, 1880.

far more agreeable than sodium salicylate, and vastly more so than the nauseating guaiac.

2. If peri-amygdalar infiltration has already set in, it is an open question in every case as to whether we shall be able to prevent suppuration. An incision is I believe indicated wherever there is engorgement, even though, no pus has yet formed. The latter rarely comes before the fourth day. If it is not found no especial discomfort, then or thereafter, results to the patient from the incision, particularly if a little cocaine is used. The incision should be made where the pus is most likely to form, viz.: high up, in front of and above the pillars, far more commonly the anterior.

3. If pus is present, free incision towards the median line is indicated. It should be followed by a hot bicarbonate of soda gargle, together with poultices on the outside.

4. Care should be taken to thoroughly open the bowels with a mercurial and a saline at the commencement of treatment in any case.

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PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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(*Continued from page 645.*)

It has been interesting to note the relative frequency of males and females to these diseases, and my statistics show the following:

Males	86 cases.
Females	46 "
Sex not stated	37 "
	169 cases.

The extra liability of males to diseases of this character is probably due to the increased exposures incident to male life.

More cases occurred at the ages of twenty-three and twenty-five, and the average age appears to be between nineteen and twenty.

The ages most frequently involved are from seventeen to twenty-six inclusive, which is perhaps due to youthful indiscretions and the increased exposures common to this period.

These statistics show a proneness to such diseases during the first three years of life, which is probably due to the thin character of the cranial bones, the tendency to middle ear abscesses during childhood, and the inability to give to babes suffering from aural complaints the care possible in later life.

As to which ear is most frequently involved, the statistics show as follows:

Right ear	81 cases.
Left ear	69 "
Ear not stated	19 "
	169 cases.

Why the right ear is more frequently affected is not an important question, as the additional frequency of involvement is small, only twelve more cases being attributed to the right than to the left ear, and the absence of notes upon this point renders conclusions doubtful.

Let us first consider, in as concise a form as possible, the subject of the intra-cranial presence of pus, outside of the veins and sinuses, dependent upon an ear disease. This includes, of course, not only brain abscesses, but deposits of pus, in any situation coming under this heading, either in patches, or diffused generally over certain places or spaces.

The importance of this subject may be inferred from Barr's observations, that the deaths in London for one year from brain abscesses, following otorrhœa, were eighty-six; and in the eight principal towns of Scotland were twenty-six.

Barker considers 50 per cent. of all cases of brain abscess to be due to otorrhœa, and his view is shared by von Bergmann. Lebert places the proportion at 25 per cent., while Meyer and Ogle believe it to be about 30.

The starting point and focus of this trouble is the middle ear. It may result from either acute or chronic otorrhœa, with the tendency largely in favor of the latter.

This observation applies to all fatal cerebro-aural affections, and the statistics that I have framed upon this subject are as follows:

Cerebro-aural affections dependent upon chronic otorrhœa	118 cases.
Cerebro-aural affections dependent upon acute otorrhœa	10 "
Not stated	41 "
	169 cases.

A fair proportion of these ten cases proceeding from acute otorrhœa were instances of brain abscesss. This is especially noteworthy, because many observers discredit the fact that brain abscesses are *ever* produced from acute otorrhœa, and von Bergmann is especially wedded to this belief. My records show six cases of this character, and the reporters are Bürkner, De Rossi, Knapp, Pooley and Allport. These were strictly cases of brain abscess, starting from acute purulent otorrhœa.

Acute tympanic abscesses have a natural tendency to recovery, even if left entirely to themselves, and favorable results frequently follow even the most disadvantageous circumstances — hence the infrequency of cerebro-aural complications. Chronic otorrhœa, on the contrary, is a much more dangerous condition, and when the proximity of the middle ear, mastoid antrum and cells to the brain and its membranes, and the different sinuses, veins, etc., is considered, it is not singular that such should be the case. It is in chronic otorrhœa that we observe the foul and irritating discharge, either free or retained; also granulations and polypi, necrosis of the ossicles, tympanum, mastoid antrum and cells. Here we find necrotic openings in the walls of these cavities, and encroachment of the disease to the intra-cranial cavity. And here we notice the carrying of the disease to the brain and sinuses by the more insidious process of germ migration, by means of the minute osseous foraminæ or small blood-vessels that are not infrequently noticed connecting the tympanum, antrum, or cells, with the intra-cranial cavity. Cerebro-aural affections are especially liable to occur when a tympanic discharge has been suddenly stopped, and there can be no doubt that the antiseptic powders now so freely used by insufflation, have precipitated many attacks of this nature. Such powders undoubtedly have their use, but they should be handled with judgment, and should *never* be used in acute otorrhœa, and when employed, the parts should simply be lightly dusted, and not heavily coated.

How does the disease extend from the tympanum, antrum and cells, to the intra-cranial cavity?

Probably the most frequent method of extension is through the roof of the tympanum into the middle cerebral fossa, and from thence to the temporal lobe. In looking over the list of necrotic openings in the temporal bone, as shown by the autopsies in my collection of cases, I find that by far the most frequent location for a necrotic fistula is in this situation. The next most frequent location for such an opening, is through the inner mastoid plate to the posterior cerebral fossa, and from thence to the cerebellum.

These circumstances are quite significant in localizing brain abscesses following otorrhœa, as, if mastoid disease can be eliminated from the case, either by operation or otherwise, the probability is that the abscess is in the temporal lobe.

The disease may extend by necrosis also, through the internal ear, especially by way of the semicircular canals. And it may be directly carried to the brain, even when no necrosis is present, by several methods, as described by Barr.

1. By the foramenæ in the bone, through which pass vessels, nerves, and connective tissue.

2. By the destruction of the two fenestral membranes; in which case the internal ear becomes invaded, after which the only intervening tissue is the perforated lamella of bone, through which pass the fibres of the auditory nerve.

3. Part of the blood supply to the tympanic cavity comes from within the cranium, and the accompanying veins might carry disease to the brain, either by germ migration, or phlebitis.

Inflammation probably passes from the dura to the brain by contiguity of tissue, as there is no direct vascular or lymphatic connection between the two. Usually the abscess is located in the immediate vicinity of the focal point of disease, although this is not always the case, as it sometimes happens that healthy dura mater and even brain tissue, may intervene between the seat of original disease and the abscess. Under these circumstances infectious micro-organisms probably pass into the circulatory system from the purulent points, or are transported along the connective tissue which envelops the vessels.

The subject of diffused purulent deposits within the cranium, and that of localized abscesses, may be considered practically under one head. Isolated, encapsulated brain abscesses, following aural disease, are not of very frequent occurrence, and when found, have not been demonstrated to possess distinctive diagnostic features that would necessitate separate consideration. Indeed, my statistics only show a record of nine encapsulated abscesses in all the cases.

Almost all cerebro-aural pus deposits are accompanied by more or less meningitis, either simple or purulent. It is usually localized at the focus of disease, and in consequence its most common seat is near the tympanic roof, although it may be much diffused, and even extend down to the membranes of the cord.

Meningitis and other brain diseases do not always follow destruction of the osseous walls of the skull. The dura mater is extremely tough and fibrous in its structure, and often resists for a long period the destructive action of pus, before softening and perforation occur. Indeed, some cases have been found where the tegmen-tympani was congenitally absent, and yet no brain lesions have followed a chronic purulent otorrhœa. Perforation of the dura mater, however, is not at all necessay to the extension of the disease to the brain membranes and brain substance itself.

When purulent meningitis takes place, it more frequently affects the meninges at the base of the brain, than those at the convexity. This is probably due to the downward tendency of inflammation. The substance of the cortex of the brain usually becomes more or less infiltrated with pus in these cases.

Besides being found in the membranes, pus may be found in almost any part of the brain substance, and is often generally distributed over an entire hemisphere, and sometimes is deposited on the opposite side of the brain from the point of lesion.

Abscesses may be situated in different parts of the brain, and are most frequently found in the temporal lobe and the cerebellum, in the order of their mention. My records show the presence of abscess in the temporal lobe forty times, and in the cerebellum thirty-one, and they are not infrequently found in the middle lobe.

It must be remembered, that while I have recorded 169 cases of intra-cranial diseases following otorrhœa, only ninety-eight of them were recorded as abscesses proper. This magnifies the percentage of abscesses found in the temporal lobe and cerebellum.

Notwithstanding the fact that many brain abscesses are connected with the tympanum, by a fistulous opening through the tegmen-tympani, it is a noteworthy fact, that the *body* of the abscess is not usually located *immediately* above the diseased tympanum. In the event of its being here situated, the roof of the tympanum would be a strong vantage ground for operation, and many abscesses would probably be self-limited, and quiescent in their nature, owing to a spontaneous and natural drainage through the tegmen.

McBride thinks that if the auditory nerve is involved, as shown by the lack of bone conduction, the abscess will probably be found behind the tentorium. Barker concludes that cerebellar abscesses are *always* found at the outer and anterior portion of the cerebellum, near the petrous. This view cannot be substantiated, for, while it is true, this is by far the most frequent point of lesion, cerebellar abscesses are sometimes found in other parts of the cerebellum, as will be noticed by a perusal of some of the reports of autopsies in my statistics.

Korner considers that children under ten years of age, seldom suffer from cerebellar abscesses, on account of the great distance of the posterior fossa of the skull from the auditory meatus at this age.

Hulke believes that in young people, the abscess is located, usually above the tentorium cerebelli; in older people, below it.

Abscesses are sometimes multiple, connected or unconnected, and this should always be borne in mind, in operative interference, if a thorough opening of an abscess does not lead to recovery.

(To be continued.)

SPONDYLITIS.

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Spondylitis, also called Pott's disease, spinal caries, etc.. may be the result of traumatism, syphilis, or tuberculosis; or it may follow scarlet fever, measles, whooping cough, etc., and appear to be dependent upon the morbific germ of those diseases; but however it begins, or whatever be the specific germ assumed to be the cause, the symptoms presenting and the indications for treatment are the same, and all cases sooner or later show evidences of the presence of the tubercular bacillus. It is probable that the disease may commence in any of the connective tissues composing the spinal column, but there is little satisfactory evidence to show that it ever begins elsewhere than in the cancellous tissue of the vertebral bodies, or upon their anterior aspects. Very rarely has the disease been found so located as to render it a fair assumption that the primary focus was located either in the intervertebral discs, the laminæ, arches, articular facets, or processes.

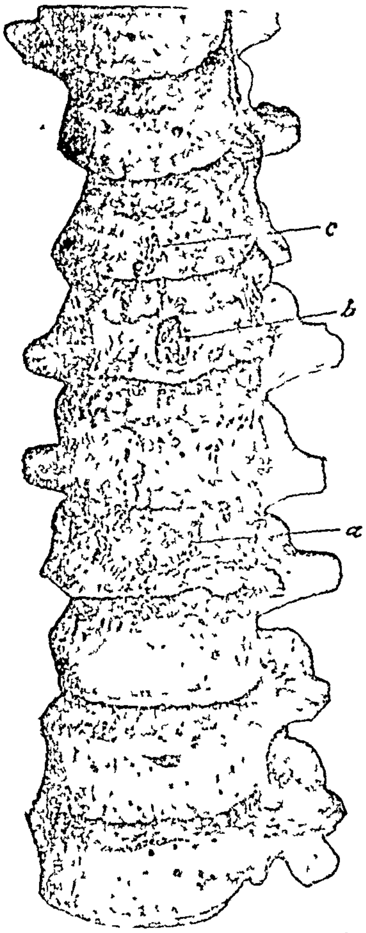

FIG 1 —Lumbar and dorsal spondylitis commencing. *a* Opening in anterior surface of second lumbar vertebra *b* Similar opening in the twelfth dorsal vertebra *c* Beginning erosion of the eleventh dorsal vertebra

In traumatic cases the early symptoms vary with the injury received; the late symptoms are those of the ordinary tubercular case. Spondylitis arising without assignable cause in very young children, cases of multiple joint disease where spondylitis is present at two points separated by one or more healthy vertebræ, or coexisting with disease at some other joint, and spondylitis in classes notoriously syphilitic, may be suspected of having a syphilitic rather than a tubercular origin and worthy of the administration of large doses of mercury and iodide of potash. It is only in the improvement which follows this treatment that these cases materially differ from the ordinary tubercular cases. Those cases which follow scarlet fever, measles, etc., show no peculiarities except a proneness to early suppuration. The ordinary tubercular case presents the irritative symptoms indicative of inflammation in the vertebral bodies. These will be discussed in detail at another time.

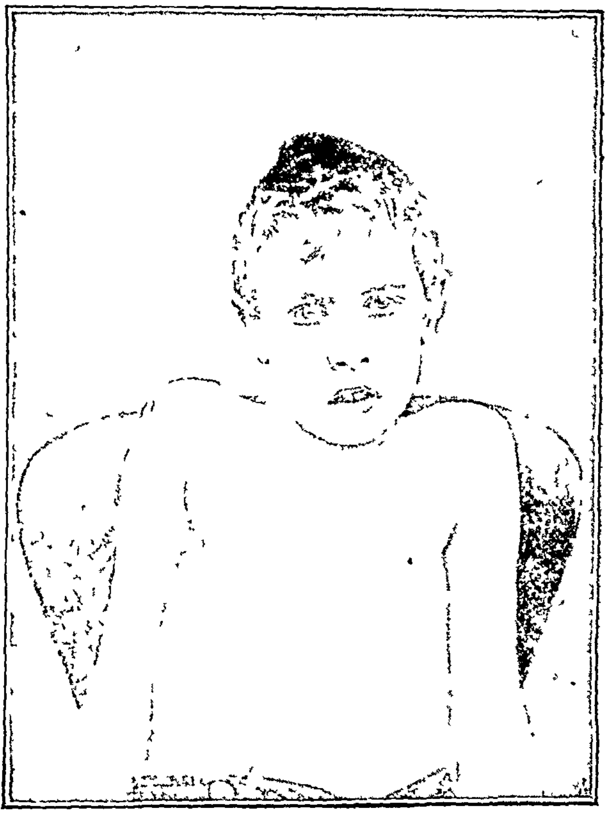

FIG 2 —Pained facial expression in spondylitis

The principles of treatment are immobilization and relief from weight bearing; in a word, *physiological rest of the diseased part*. The means which the surgeon employs to secure this physiological rest will be discussed in a later paper.

Symptoms in general.—Certain symptoms are common to the disease in whatever part of the spine it may be located; certain other symptoms are peculiar to the part of the spine affected. The symptoms common to the disease in any part of the spine are as follows: The face expresses apprehension, pain and premature old age. The patient walks and moves with care as if to avoid any jar or sudden movement. There can be obtained a history of uneasiness, fretting, and irritability, and for some time the patient has been disinclined to his usual active exercises and has been easily fatigued. Distant pain, felt in the terminal filaments of the nerves whose motor branches go to supply the muscles controlling motion of the spine at the point of disease has generally been felt, though it may have been absent, a may also have been restlessness, crying, and screaming during the first hours of sleep. Deformity may or may not have been noticed; and the complications—abscess and paralysis—may or may not have appeared.

For the proper examination of a patient he should be stripped naked. Girls who have reached the age of puberty and women should receive certain consideration, and it is the custom to examine such with the back alone bared. It is convenient to have the undershirt put on in front as an apron, with the sleeves pinned or tied about the neck; the skirts can then be dropped to a level with the greater trochanters and held with a large safety pin, or by a piece of bandage tied around the hips. The back is then inspected for any lateral deviation, excurvation, incurvation, or prominent vertebræ. If found, the disease may be suspected of being present at the middle of the curvature; but it must be remembered that spondylitis, easily demonstrable is, usually present some months before deformity of the spinal column is apparent. All of the normal motions should now be tested, both actively and passively; the head should be rotated to right and to left, and the shoulders twisted in the same directions while the pelvis is held steady; the spine should be bent forward and backward, and to right and to left. Any portion which shows rigidity to *all* the normal motions is, or has been, the seat of an inflammatory process; but if there be rigidity to bending in one direction only, or if bending in any one direction be normally free, the diagnosis of spondylitis is rendered extremely doubtful. It is upon this rigidity, which for a long time is due solely to involuntary muscular spasm, that the diagnosis must depend; it is ever present, both sleeping and waking, and nothing abolishes it except profound anæsthesia and the termination of the inflammatory process. It is the first symptom to appear and the last to disappear; and when, and only when, it is no longer present can a cure be safely predicated.

Tenderness to direct pressure over the suspected area, unless local abscess be present, will not be found. This local tender point, which is taught by the professors of and the text-books on general surgery as *the* diagnostic symptom, always counts against rather than in favor of a diagnosis of spondylitis. It should be remembered that the disease is located in the vertebral bodies, and usually in their anterior parts, and in any case is far beyond the reach of direct pressure, and consequently tenderness to direct pressure is, unless supported by strong confirmatory evidence, to be looked upon as indicative of some other condition than the disease in question.

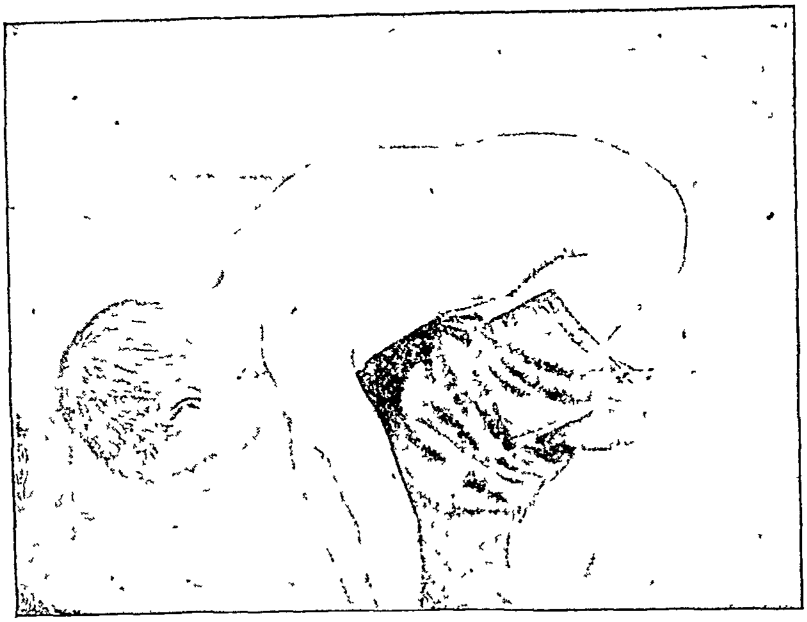
FIG 3—Lumbar spondylitis Stooping with rigid lumbar spine.

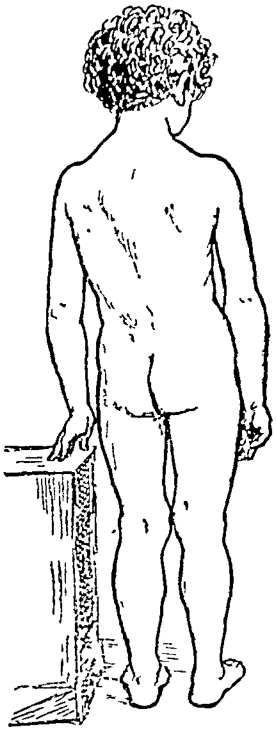
FIG 1—Lateral deviation in the spine in commencing spondylitis.

Downward pressure and concussion on the head, and sudden twisting of the spine by wrenching at the shoulders when the patient is off his guard, are tests as unnecessary as harmful. They will not be found to be of any value in the very early period and can scarcely fail to inflict injury as well as pain upon the patient when the disease is at all advanced. Sooner or later deformity of the spine appears, and a lateral curvature with or without twisting of the vertebræ—rotation—often appears before kyphosis, the so-called "angular curvature," makes its appearance. If but one, two, or three vertebræ be affected, and if the destructive process has been considerable, the deformity fairly approximates an angle; but if several vertebræ are diseased each to only a slight degree, the deformity will be a curve.

Motor paraplegia affecting both lower extremities and at times the bladder and rectum, and at times also the upper extremities, may come on before the bony deformity or with the deformity, or comparatively late in the disease. It is generally due to thickening of the membranes of the cord from the contiguity of the inflammation in the bone, or to an actual infiltration with tubercular material. Paraplegia occurs by far the most frequently when the disease is located in the upper dorsal region. It bears no relation to the acuteness of the angle; it may disappear while the bony deformity goes on increasing; and it has seldom been shown to depend upon bony pressure. The paraplegia is characterized by an exaggeration of all the tendon reflexes in the affected extremities, a tonic spasm of all the muscles, and an inability, more or less complete, to move any portion of the affected parts.

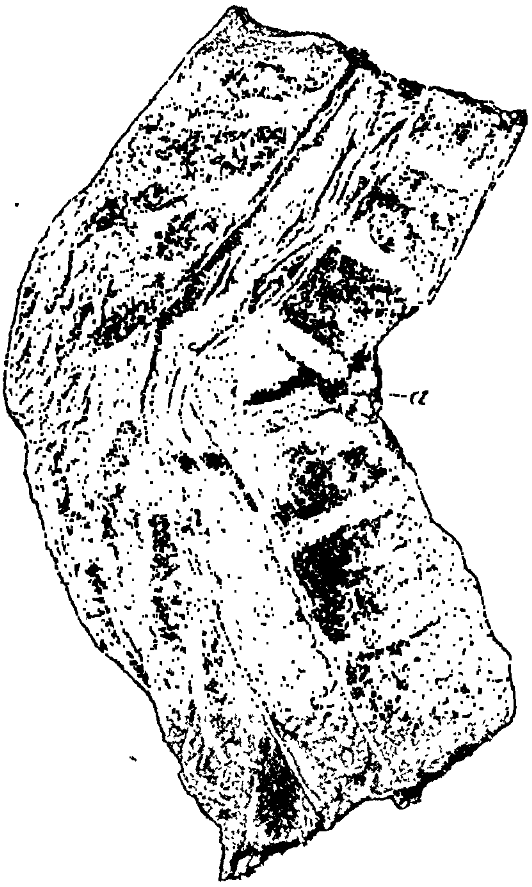

FIG. 5.—Lower dorsal spondylitis, with ordinary deformity. Almost complete absence of the body of the ninth dorsal vertebra. In front is a fistulous canal leading to a psoas abscess.

Although tubercular "pus" is probably formed to some extent, the tubercular abscess does not appear in all cases. Abscesses are quite frequently seen when the disease is in that part of the spine below the diaphragm; less frequently with disease in the cervical region, and still less frequently with disease of the dorsal spine above the diaphragm. The abscess may make its way in any direction, opening externally, or into any of the open or closed cavities of the body, or it may become absorbed even after it has attained very considerable proportions.

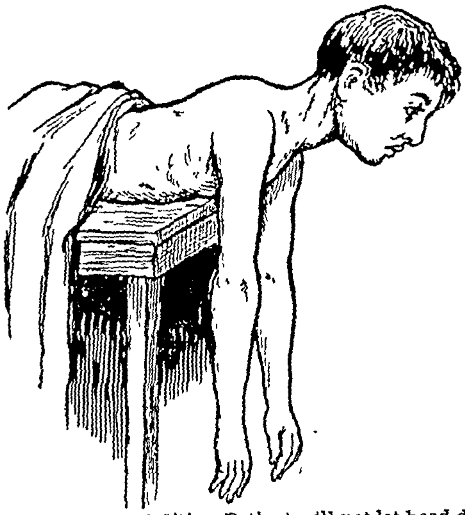

FIG. 6.—Cervical spondylitis. Patient will not let head dangle.

Cervical spondylitis is most frequently found in the upper two or three vertebræ. When the cervical spine is suspected, before deformity has occurred, in very young children, the child should be examined by placing *him prone across* the parent's knees. If disease exists the child will not let the head dangle no matter how prolonged the examination may be. If placed supine, he will show no inclination to bend the head toward the sternum as in the first act of rising. As the disease advances malposition comes on. If the upper portion of the cervical spine be affected, twisting of the head may be expected; with disease somewhat lower down the head is advanced, the chin dropped on the chest, an angular projection of the spine at the diseased point may be felt, and the posterior spinal muscles stand rigidly out and may simulate an abscess in appearance. When the disease is still lower down the chin is elevated and relatively somewhat advanced, and the head is thrown back towards the shoulders, and in extreme cases may rest upon them. The face expresses apprehension, and the head is moved, if the patient can move it at all, with anxious care. All motions both active and passive at the point of disease are restricted to a greater or less degree, or

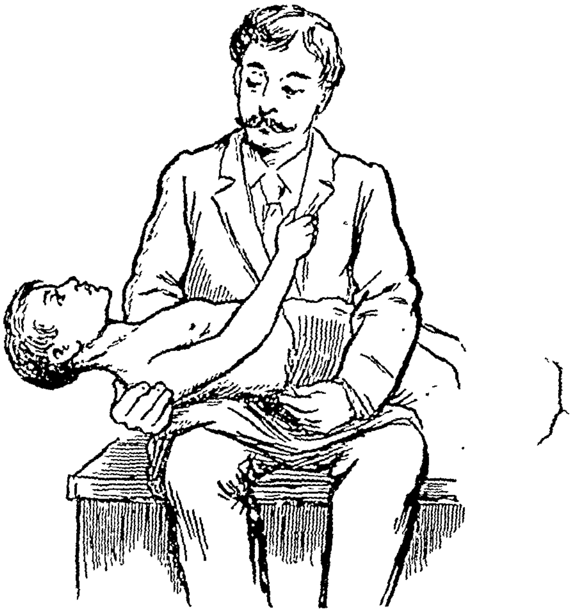

FIG. 7.—Cervical spondylitis. Patient will not let the head dangle.

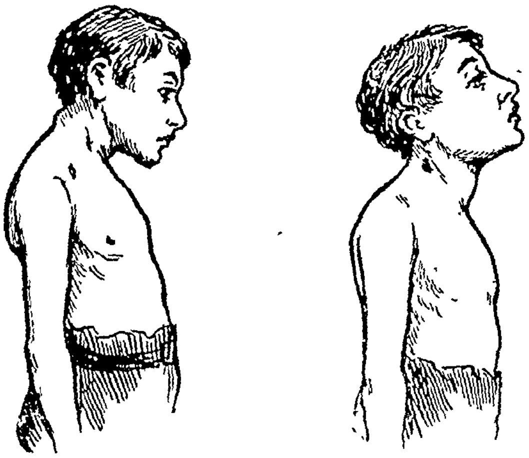

FIG. 8.—Cervical spondylitis. Chin dropped.

Cervical spondylitis. Head [illegible]vanced and chin raised.

wholly abolished. Pain may be complained of running up the back of the neck and head, down the arms or in the chest. Abscess does not frequently occur; when it does it usually points laterally on one or the other side of the neck; it may point in the pharynx. The pharynx, however, need not be examined unless some symptom point to abscess in iat location. Before the formation of abscess the nger in the throat reveals nothing, it is very repul-ve to the patient, and the normal prominence of ie vertebral bodies may mislead the surgeon. Paraplegia is seldom a complication of spondylitis in the cervical region. Occurring, it may affect the lower extremities alone, as is the rule, or the upper extremities as well. Striking downward upon the top of the head with the open palm to test the sensitiveness of the veterbræ is a useless and a most barbarous procedure.

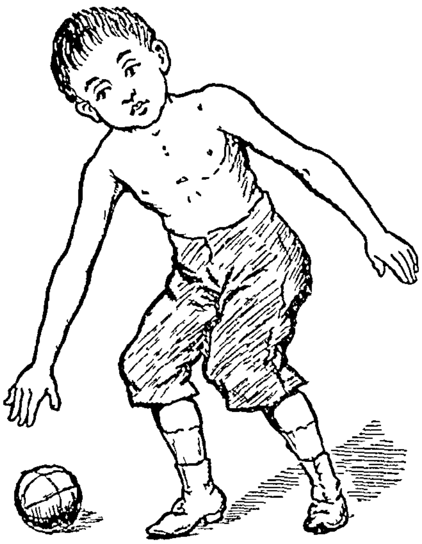

FIG 10—Dorso lumbar spondylitis. Carefully reaching for an object on the floor

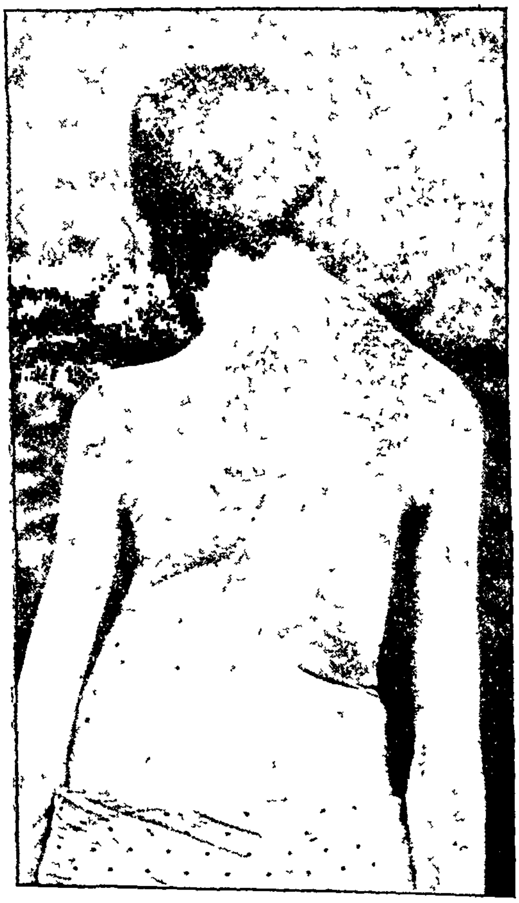

FIG 11—Cervico dorsal spondylitis Lateral deviation with marked tation

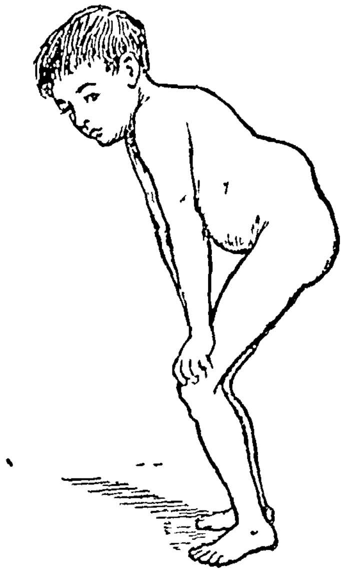

FIG 12—Lumbar spondylitis Patient climbing up his own legs.

Dorsal spondylitis is much more frequent than disease in the cervical and lumbar regions. Before the appearance of kyphosis the diagnosis must depend upon the persistent distant pain, a disinclination to indulge in rough play, a growing tendency to stand with the elbows resting upon a chair or table, a grunting respiration, and an inability to rise from a stooping posture or pick up an object from the floor without resting the hand upon the knee; and it should be borne in mind that patients are frequently treated for many months for bellyache before deformity appears. Any distant pain which does not yield readily to the proper medication should lead to a careful examination of the spine. Often there is crying when the child is lifted, and cough accompanying the grunting respiration.

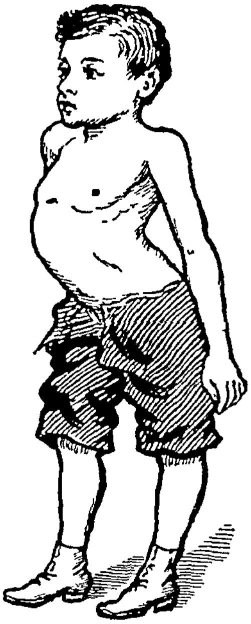

FIG. 13.—Dorsal spondylitis. Prominent chest.

If the upper two or three dorsal vertebræ be the ones involved, the head may be thrown backward and the neck held rigid to forward and lateral bending; and paraplegia may even come on before any kyphosis can be made out. When disease is located in the lower dorsal region, the patient may limp and complain of pain in the thigh, simulating hip disease, before any deformity is noted. Lateral deviation of the column, with or without rotation of the vertebræ, is often present before the antero-posterior deformity appears. In very young children, before any spinal deformity has appeared it is convenient to examine them by placing them across the separated knees of the parent. If there is disease the spine will not sag into an anterior curve in the normal way. If placed sitting upon a table with the knees straight, the child will not bend forward, arching the spine in the usual way. The patient is disinclined to forward bending, squatting with rigid spine instead of stooping when picking up an object from the floor, and evinces weakness on rising, often regaining the erect posture only by climbing hand over hand up his own legs.

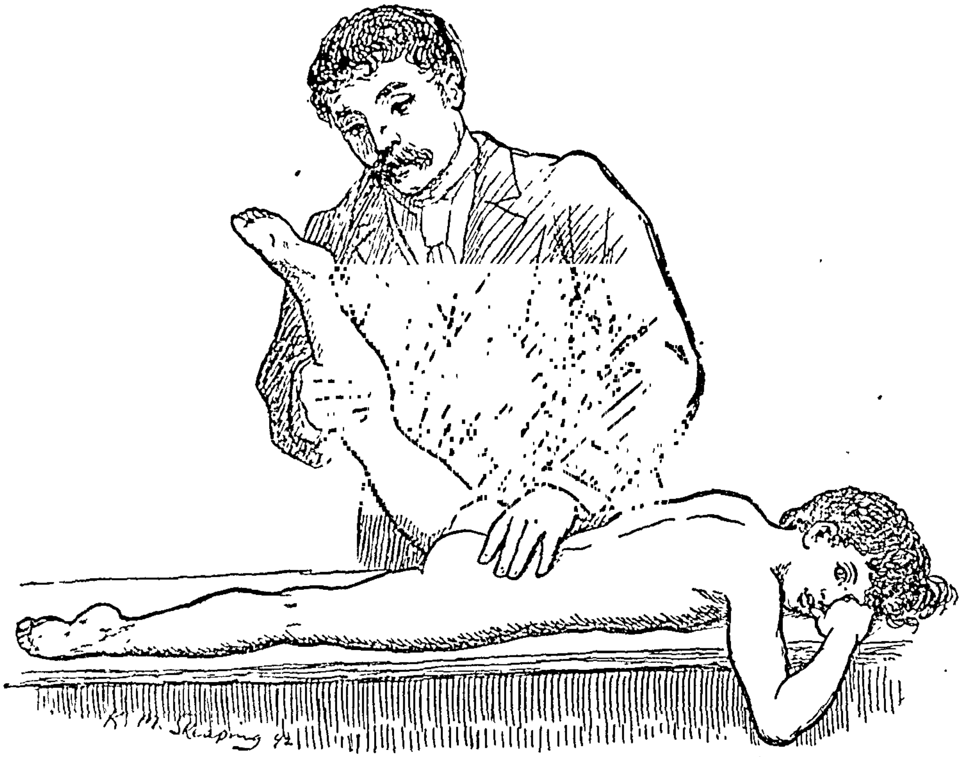

FIG. 14.—Testing for psoas contraction. Shows normal extension.

There seems to be an almost universal belief among the rank and file of the profession, and this belief has been fostered by nearly all of the teachers and writers on general surgery, that the most early and constant, and in fact *the* diagnostic symptom of spondylitis is *tenderness on pressure over the point of disease.* There is no lack of knowledge as to the pathological anatomy; it is perfectly well known that the lesion is located in the vertebral bodies, and usually in their anterior portions, and that it is quite impossible that there should be tenderness on pressure over the spinous or the transverse processes. Unless then there be disease of the processes or laminæ, an exceedingly rare condition, or unless an abscess which will be readily detected by palpation be present, *tenderness on pressure will not be found in spondylitis.* In a doubtful case its presence must count as an important symptom *against* spondylitis.

When kyphosis has appeared however, the diagnosis will be readily made, for in addition to the peculiar and striking deformity, all of the symptoms heretofore mentioned are likely to be found on careful investigation. Sooner or later projection forward of the chest takes place, compensatory and proportionate to the angular deformity at the back. Paraplegia, which is more common when disease is located in the upper dorsal spine than elsewhere, may come on early before any deformity has appeared, or at any time during the course of the affection, or very late in the disease, and may recur again and again. It begins with exaggeration of the tendon reflexes, stumbling in walking, increasing lack of muscular control, and goes on until all control over the lower extremities is lost, and the limbs are held rigidly extended; at times they draw up with spasmodic crampings and may suddenly, without the patient's volition, be extended with a jerk. Passive flexion at the ankles induces marked ankle-clonus. Rarely the sensory nerves and at the same time the bladder and rectum are affected.

Abscess does not frequently appear when the disease is above the diaphragm, although it is probable that tubercular pus forms to some extent in all cases; when the abscess does present it usually makes its appearance from between the ribs a short distance, two *to four inches, from the line of the spinous processes*; rarely however it makes its way downward before appearing upon the surface. *With disease in* two or three dorsal vertebræ the abscess usually follows the course of the psoas muscle.

Lumbar spondylitis is less frequent than disease in the dorsal, but more frequent than disease in the cervical region. Lumbar spondylitis is usually first recognized by an awkward gait, a limp, and a slight lordosis. The shoulders are thrown backward, one or the other foot is slightly advanced, and the patient walks with care and holds his spine rigid. He is even less inclined than in dorsal disease to forward bending. If there be pain it is usually felt down the anterior and inner surfaces of the the thigh. Most of the symptoms enumerated as characteristic of disease in the dorsal region will be found. Contraction of one or both psoas muscles may come on before the formation of abscess and before the appearance of kyphosis. It is this early involuntary spasm of the psoas muscle, flexing the thigh and limiting its extension before the appearance of deformity that leads to the mistaken diagnosis of hip disease even in the hands of experienced observers.

To test for contraction of the psoas muscle, the patient is placed prone upon the table, the pelvis is held firmly down with one hand while with the other first one and then the other knee is lifted upupward and backward. The freedom with which they can be raised, and the difference in extent, or the extent to which they differ from the normal must be noted. Then with one hand upon the back at about the tenth dorsal vertebra and the other hand lifting both knees at the same time, the rigidity of that part of the spine is noted. It is upon this rigidity that the diagnosis must depend. In normal children the spine can be bent backward so far that the thighs are at nearly a right angle with the upper dorsal spine.

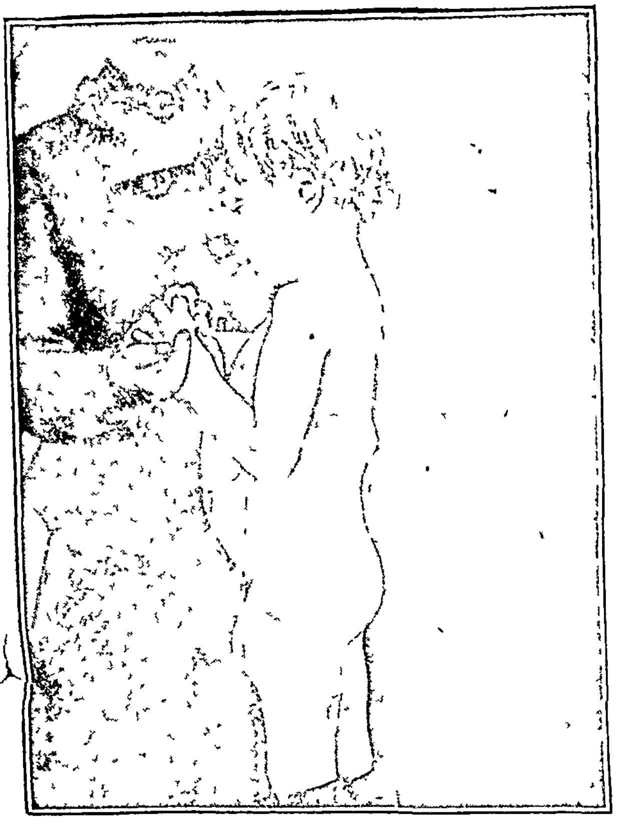
FIG. 15.—Dorso lumbar spondylitis Psoas abscess pointing on the thigh.

Paraplegia is not common. When it occurs it in no way differs from that found complicating dorsal disease. Abscess is frequent, usually following down the course of the psoas muscle and pointing on the anterior surface of the thigh below Poupart's ligament. When the disease is below the third lumbar vertebra the abscess may pass down and point in the buttock; or with disease located in any portion it may pass latterally and point in the loin some inches from the spine.

Differential diagnosis.—A strain may give the early symptoms of spondylitis; for a strain left untreated in a tubercular subject may become a true tubercular spondylitis. A strain should give a distinct history of traumatism.

A rachitic spine closely resembles the "rounded curvature" of spondylitis, the deformity is not infrequently a rigid one, and psoas contraction may also be present; but it will be found only in young children, and the child will nearly always present other evidences of rickets. The mistaking of a rachitic spine for spondylitis however will be of little harm to the patient inasmuch as the rachitic spine demands a rigid supporting brace.

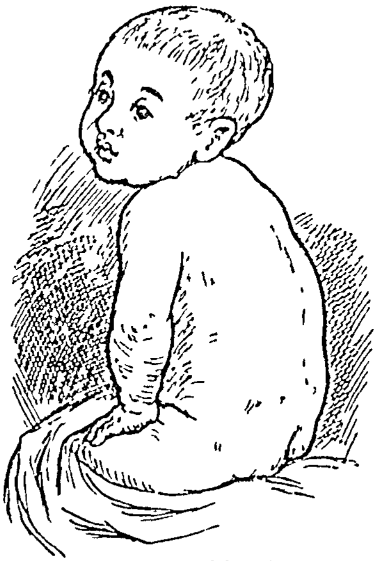
FIG. 16.—Rachitic spine.

Scoliosis—lateral curvature—will not be mistaken for spondylitis in that the curvature is not usually rigid until some time has elapsed and the deformity has become very considerable. On the other hand spondylitis may be mistaken for lateral curvature and the necessary immobilization withheld and possibly exercises advised. A slight lateral curve with or without rotation, if it be rigid is probably a commencing spondylitis. Exercises should be withheld and a support applied. A few months will clear up the diagnosis. Pain is rarely associated with scoliosis; it is the rule with spondylitis, though it should not be forgotten that it may be absent. A careful circumferential outline of the chest may throw some light. In spondylitis it should be practically sym-

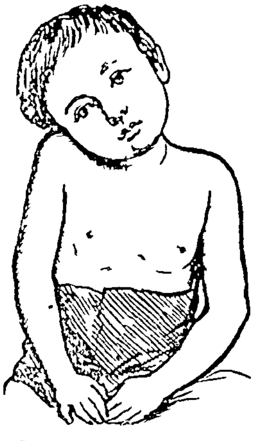
FIG 17.—Torticollis The chin points away from the prominent sterno mastoid muscle

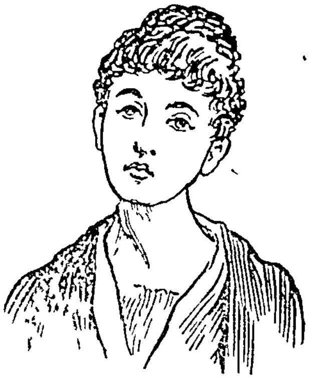
FIG 18.—Cervical spondylitis The chin points towards the prominent sterno mastoid muscle.

metrical; in scoliosis it very early becomes a symmetrical, bulging posteriorly on the side of the convexity of the curve and flattened posteriorly on the side of the concavity; in front the conditions are reversed.

Torticollis—wry neck—is closely simulated at the first glance by spondylitis in the upper cervical region. Still in many cases the diagnosis can almost be made at sight. In wry-neck the chin points *away* from the prominent sterno-mastoid muscle; in spondylitis it points *towards* that muscle, if only one muscle be prominent. In spondylitis the movements of the head are restricted in all directions; in torticollis only in one direction—that which puts the shortened muscle on the stretch.

Hip disease is not infrequently the diagnosis when contraction of the psoas muscle comes on in lumbar spondylitis prior to kyphosis. The patient walks with a limp, complains of pain in the groin or along the anterior surface of the thigh, the thigh is flexed on the pelvis, and attempts to overcome this flexion are resisted by involuntary muscular spasm and give the patient pain. It will however be found that the thigh can be flexed to the normal degree, and that when flexed sufficiently to fully relax the psoas muscle rotation at the joint is free, painless and normal. In a word in lumbar spondylitis extension is the only motion at the hip joint that is restricted by muscular spasm, whereas in hip disease motion in all directions is restricted.

The hyperæsthetic spine, also called irritable spine, if patiently and carefully examined gives no rigidity from involuntary muscular spasm; there is no true distant pain—the pain is located over some portion of the spine itself and is associated with tenderness on pressure. The lightest touch is often complained of more than firm deep pressure. The condition is most frequently found in young women and may have existed unchanged for years. There is no true kyphosis.

Malignant disease of the spine in its early stage cannot be diagnosticated from commencing spondylitis. The history of the case as to hereditary tendency taken together with the age of the patient and his general appearance may make the diagnosis of malignant disease probable, but nothing can be positively said until the progress of the case or the pressure of the tumor clears up the case.

Sacro-iliac disease is not of frequent occurrence, and its early symptoms are obscure. Muscular rigidity to bending in all directions of the lumbar spine will not be found unless the disease is associated with spondylitis of the lumbo-sacral junction. Examination by the rectum should be made in all cases suspected of sacro-iliac inflammation.

The tpphoid spine can of course be found only as a sequela of typhoid fever. There is tenderness on pressure, and on a lateral and forward bending, no special pain in the nerve distribution, no psoas contraction, the onset is sudden, the recovery rapid.

Prognosis.—As to deformity: In the cervical and dorso-lumbar (tenth dorsal to third lumbar inclusive) regions under favorable circumstances the deformity may be reduced if consolidation has not already taken place, and any increase prevented if consolidation has commenced. If no deformity has yet occurred its appearance can of course be readily prevented, and as a rule a rapid cure can be effected. In the upper dorsal region, first to sixth vertebræ, the deformity may be expected to increase under any form of treatment with which we are familiar. From the sixth to the tenth dorsal an increase can generally be prevented, but rarely can any deformity be reduced. When the disease affects the lower lumbar region, the fourth and fifth vertebræ and sacrum, the deformity may be expected to come on and to increase up to a certain point unless the patient be treated continuously in the recumbent posture until consolidation is well advanced. In a word, if the spine can be made straight and kept so sufficiently long for the ossific matter to deposit in the space made vacant by the disease an anchylosis free from deformity, or nearly so, will result. In a few cases more or less restoration of the normal motion is gained.

As to paraplegia: In nearly all cases the paraplegia is due to the pressure of the inflammatory products in the neighborhood of the bony tuberculosis; in these cases recovery may confidently be expected when shrinking of the new material takes place on the subsidence of the inflammation if the patient be kept recumbent for a sufficiently long time. Rarely the paraplegia is due to pressure from a displaced spicula of bone; but there is no evidence that it is ever caused by the acuteness of the angle of the canal. The authors have observed complete restoration of function to the paralyzed limbs in a case where the motor paralysis had been complete for nearly four years, and in another case a recent partial recovery where the sensory paralysis had existed for two years and the motor paralysis for ten.

As to life: Although spondylitis is a most prolonged and serious disease the prognosis as to life, is remarkably good. Only about 8 per cent. of cases receiving proper nursing and treatment die. Of these the cause of death in nearly all is tubercular meningitis, or a general tuberculosis in which the meningial symptoms play a most prominent part.

The duration of the disease in any particular case can not with accuracy be prognosticated. Treatment will be required for at least two years, and may be necessary for twice or thrice that length of time. The duration of the paraplegia is on an average about a year. Relapses of the paraplegia may occur, but are not frequent. The lack of an early diagnosis and of early, energetic and prolonged treatment may be considered as the cause of the deformity which ultimately results in so many cases.

THE U. S. QUARANTINE LAWS AND THEIR SCOPE.

Read before the Chicago Medico-Legal Society, Dec. 3, 1892.

BY JOHN B. HAMILTON, M.D., LL.D.,
SURGEON, FORMERLY SUPERVISING SURGEON-GENERAL, U. S. MARINE HOSPITAL SERVICE.

Mr. President and Gentlemen,—When our learned Secretary suggested to me the writing of a paper on some subject of mutual interest to the members of the Medico-Legal Society, I could only think of the question which for some years had a practical bearing on my acts as an executive officer, and which to-day is of deep interest to every inhabitant of our country, whether denizen or citizen. That question is: How far are our quarantine laws effective in preventing the inroads of disease? And growing from that another inquiry: Are there defects needing legislative remedy?

If my discourse to-night shall seem to dwell on the legal more than upon the medical side of the questions proposed, it is because, as national health officer, I was in position to note the defects existing, and from time to time to propose legislative remedies. The later laws were therefore intended to remedy a defect in the sanitary defenses which on actual trial had been proved to exist.

Permeated with that extreme fear of paternal government that has from the beginning characterized our country, Congress has long hesitated to enact health laws falling under the "general welfare" clause of the Constitution, and has always rather chosen to enact them under the authority given Congress to regulate commerce. Indeed, there has seemed at times a rather pronounced disposition to evade the duty devolving upon Congress in the matter of the public health. Historical study of the dates of the Acts show that they have always been placed on the statute books shortly after a great epidemic. Thus the Act of February 1, 1799, was passed just after the close of the great yellow fever epidemic in Philadelphia, and the Woodworth bill of 1878 was placed on the statute book while the scourge of that year was threatened.

Let us now summarize the existing law. The Act February 1, 1799, provided for coöperation of all Federal officers in maintaining the State quarantines, and extending assistance to State officers. It harmonized the customs service with the quarantine service of the States so far as practicable, authorized the building of customs warehouses at quarantine stations, and in case of the existence of epidemic, the temporary removal of public offices, the courts and prisoners in confinement, to a place of safety.

It is not apparent, from an examination of the text of the Act, that Congress waived its jurisdiction in the matter, or its right to establish quarantine, but the plain purpose of the statute was to aid the State quarantines then in existence.

It is only fair to assume that the question of expediency was taken into account. The country was in infancy, and the public revenues were then needed for public purposes quite remote from quarantines. But so far from waiving its jurisdiction, it was directly implied in the following words: "But nothing herein shall enable any State to collect a duty of tonnage or import without the consent of Congress."

But this topic will be reverted to further on.

April 29, 1878, the Woodworth bill, known as the National Quarantine Act, became a law. In the interval, public sentiment had crystallized rapidly in favor of a National quarantine service, instead of State quarantines. Annual quarantine conventions, called by the mayors of several cities, were held respectively at Philadelphia, Boston, Baltimore and New York, the last named in 1860, and after full consideration it was agreed that Congress should be requested to establish a uniform quarantine system. The systems in vogue at that time varied with the port. The number of days detention, the methods of quarantine practice, were everywhere different, and the sanitary views widely conflicted. Commercial interests were injuriously affected by this lack of uniform practice at the different ports of entry.

The outbreak of the Civil War placed commercial topics in the background for a period of six years, and as commerce began to revive, we find a renewal of the old quarantine questions, but no definite action was taken until the passage of the Act of 1878

This Act really established a National Quarantine; and although no direct penalty was fixed for a violation of its provisions, yet the power given the Collectors of Customs to refuse entry operated to fairly enforce its provisions so far as power over vessel, passengers and cargo were concerned. No direct establishment of quarantine stations was authorized by the Act, but they were implied when the power to frame regulations was conferred on the supervising Surgeon General of the Marine-Hospital Service, acting under the direction of the Secretary of the Treasury, subject to the approval of the President. No appropriation was made to carry the Act into effect.

This Act prevents entry of any vessel or vehicle coming from any foreign port or country where contagious disease may exist, except under such rules and regulations as may be prescribed under the Act.

The law directs all consular officers to immediately notify the Surgeon General in case of an outbreak of an epidemic within their respective districts, and further authorizes and directs that officer to transmit the information thus obtained to National and State Officers concerned with quarantine. A final clause is noticed: "That there shall be no interference in any manner with any quarantine laws and regulations as they now exist or may hereafter be adopted under State laws." This provision was not in the original bill, as it was introduced, nor as it came from the Committee, but was adopted as a Senate Amendment, as a sort of compromise. A certain distinguished Senator from New York, antagonized the bill from its incipiency, and praised the New York quarantine: failing to destroy the bill, he was successful in crippling it in the interest of the accomplished health officer then at the head of the New York quarantine (Dr. Vanderpoel.)

But by whatever means adopted, it has since remained as a limitation on the effectiveness of the Act, and on a recent occasion in which the country was imperiled, this proviso was held to be operative, subsequent legislation notwithstanding.

It has before been stated, that no appropriation was made to carry into effect the Act of 1878. The epidemic of the summer of that year decimated the Mississippi Valley, the city of Memphis especially falling in the shadow of the scourge. Congress, roused to energy, passed an Act February 3, 1879, establishing a National Board of Health, and that body recommended the passage of an Act containing all the provisions of the Act of 1878, but substituting the National Board of Health as the executive authority, instead of the Supervising Surgeon General. This Act was limited to a period of four years, and was clearly experimental. It was approved June 2, 1879.

Before the expiration of the National Board of Health Act by limitation, Congress had grown dissatisfied with that body, and its business methods, and not only refused to appropriate money for its continuance, but made a new appropriation to be used as a contingent fund, in case of epidemic, to be expended by the President of the United States in his discretion in preventing the spread of the disease. While the President might use this fund in his discretion, he was nevertheless bound to use that discretion in accordance with the statutory limitations. He clearly could not use the agency of the National Board of Health, because that body has asked for the money in the regular book of estimates, but Congress had placed the funds in his hands. An examination of the Debates in Congress shows that an amendment offered on the floor of the House to place the contingent appropriation at the disposal of the National Board of Health, had been overwhelmingly defeated. The alternative presented to President Arthur, was to use the existing machinery of the Marine Hospital Bureau, or to donate the money outright in case of need, to local boards of health. He chose to use the government agency, and the yellow fever breaking out on the Texas frontier, the sanitary campaign and the fund was managed by the writer.

The precedent thus set was followed by succeeding Presidents, and in all cases where this contingent fund has been employed, it was directly employed in aid of State and local boards of health, always bearing in mind the limitation of the proviso of the law of 1878. Repeated incursions of yellow fever at some of our Gulf ports, and the measures necessarily taken to prevent the introduction of small-pox from Canada in 1885, induced Congress to take measures for a permanent quarantine establishment, and the writer was asked by the Chairman of the Epidemic Diseases Committee of the Senate, to prepare an Act based on the extensive experience of the Bureau in the matter, and the writer framed the bill which became a law August 1, 1888, which established eight National quarantine stations, directed the procurement of sites, and appropriated a half million dollars for the purposes of the Act. This Act met with no obstruction in its passage, and became a law exactly as introduced, without amendment. It further operated to revive the Act of 1878 by distinct reference to two of its Sections, and imposed a penalty for the violations of its provisions. It provided for the punishment of trespassers on the quarantine stations, and authorized the prosecution by the nearest U. S. attorney. The Act took jurisdiction at once over the entire Pacific coast, by establishing quarantines at San Diego, San Francisco and Port Townsend. Quarantines were also established at Delaware Breakwater, Cape Charles, Sapelo Sound, and two on the Gulf coast. Three State quarantines were passed over—that of Louisiana at New Orleans, New York, and Boston, and at these ports the principal portion of the work is done on the Atlantic and Gulf seaboard. In the introduction of the bill, it was sought to avoid antagonism with the powerful local organizations, and by complete equipment and good management of the Government Quarantines to so demonstrate their superiority that none would finally question the wisdom of a general transfer.

The matter of land quarantine was up to this time untouched by legislative enactment. Its importance had been made fully apparent in the operations in Pensacola in 1883, and in Jacksonville in 1888.

The writer prepared a bill, which after some verbal changes, was transmitted by the Secretary of the Treasury (the Hon. C. S. Fairchild) to the Speaker of the House of Representatives, with a recommendation for its passage. It became a law substantially as transmitted March 27, 1890. Its title is: "An Act to prevent the introduction of contagious diseases from one State to another, and for the punishment of certain offenses." The text of the Act is, after the enacting clause: "That whenever it shall be made to appear to the satisfaction of the President, that Cholera, Yellow Fever, Small-pox or Plague exists in any State or Territory, or in the District of Columbia, and that there is danger of the spread of such disease into other States, Territories or the District of Columbia, he is hereby authorized to cause the Secretary of the Treasury to promulgate such rules and regulations as in his judgment may be necessary to prevent the spread of such disease from one State or Territory into another, or from any State or Territory into the District of Columbia, or from the District of Columbia into any State or Territory, and to employ such inspectors and other persons as may be necessary to execute such regulations to prevent the spread of such disease.

"The said rules and regulations shall be prepared by the Supervising Surgeon-General of the Marine-Hospital Service, under the direction of the Secretary of the Treasury.

"And any person who shall wilfully violate any rule and regulation so made and promulgated, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than five hundred dollars, or imprisonment for not more than two years, or both, in the discretion of the court.

"SECTION 2. That any officer, or person, acting as an officer or agent of the United States at any quarantine station, or other person employed to aid in the preventing the spread of such disease, who shall wilfully violate any of the quarantine laws of the United States, or any of the rules and regulations made and promulgated by the Secretary of the Treasury as provided for in Section one of this Act, or any lawful order of his superior officer or officers, shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not more than three hundred dollars, or imprisonment for not more than one year, or both, in the discretion of the court.

"SECTION 3. That when any Common Carrier or Officer or Agent or Employé of any Common Carrier shall wilfully violate any of the quarantine laws of the United States, or the rules and regulations made and promulgated for in Section one of this Act, such common carrier, officer, agent or employé, shall be deemed guilty of a misdemeanor, and shall upon conviction be punished by a fine of not more than five hundred dollars or imprisonment for not more than two years, or both, in the discretion of the court."

It is curious that this Act of 1890 should have been completely ignored in the rather animated discussion of last summer, concerning the powers of the President *in the matter of the New York quarantine* and its deficiencies. It will be seen on examination that the Act is more than an inter-State quarantine Act; it provides for the enforcement of discipline at the quarantine stations *and for the* punishment of violations of *any* of the quarantine laws. When attention was called to this Act, the opinion was given verbally, that it was not operative, that it only contemplated inter-State quarantine, and could not be used to supplant a local quarantine, and that it could be used only at a State line.

My contention is that it does give just that authority.

There is now general agreement, I believe, that the original jurisdiction over quarantine rests with Congress; that matter having been settled by the Supreme Court in many cases.

Peete v. *Morgan*, 19 Wallace, 581;

Cannon v. *New Orleans*, 20 Wallace, 577;
State of Pennsylvania v. *Wheeling and Belmont Bridge Co.*, 18 Howard, 421;
Henderson v. *Mayor of New York*, 92 U. S., 259.
Chy Lung v. *Freeman, et al*, 92 U. S., 275;
Railroad Company v. *Husen*, 95 U. S., 465;
Hall v. *DeCuir*, 95 U. S., 485;
Telegraph Co. v. *Texas*, 105 U. S., 460;
Morgan v. *Louisiana*, 118 U. S., 455.

The uniform conclusion being that as the grant of power to regulate commerce is exclusive, "the States cannot exercise that power without the assent of Congress."

Leisy v. *Hardin*, 121 U. S., 119.

Let us inquire what is necessary to set the machinery of the Act of 1890 in operation. The necessary condition is set forth in the Act.

"Whenever it shall be made to appear to the satisfaction of the President that Cholera, Yellow Fever, Small-pox or Plague exists in any State or Territory, or in the District of Columbia, and there is danger of the spread of such disease into other States, Territories or the District of Columbia."

He must be satisfied that the disease exists and that there is danger of its spread. That is the sole condition, Having thus become satisfied, the President can then

"Cause the Secretary of the Treasury to promulgate such rules and regulations as in his judgment may be necessary to prevent the spread of the disease."

There is here no limitation, except that the next succeeding clause provides for the exercise of medical opinion in the framing of the regulations. The Secretary, after having the rules and regulations prepared, can clearly direct their execution. If these regulations should interfere with a State quarantine, that quarantine can no longer operate in conflict with the National regulation. It will be remembered that in the case of Morgan v. Louisiana, the principle was affirmed, that *in the absence of legislation* by Congress on this subject, the State legislation is valid. In the execution of the Act of 1890, there is an example of the enforcement of positive legislation on the subject. As the State quarantine law is only operative in the absence of congressional action, it is, therefore, invalid and need not be considered, and the National quarantine authorities are paramount. Any other construction of the Act of 1890 renders it of no effect and meaningless. It must be assumed that the legislative intent in the passage of this law, was that it should accomplish a certain purpose. That purpose was to prevent the spread of disease, and to make it clear that the power thus conferred upon the Executive Department should not be unnecessarily or uselessly exercised, the operation of the law was made contingent upon disease being present, and in danger of spreading.

The conditions last summer when the health officer of New York sent an impertinent letter to the President of the United States, (if we may believe the current reports in the daily press), were such as to have fully justified such action under the law of 1890, as would have placed the Government in full control of the New York quarantine. Cholera existed at the New York quarantine, and it was afterwards conveyed to the city of New York, necessarily from some defect in the administration of the New York quarantine. Asiatic cholera is known to be naturally foreign to the soil of New York City, and the only place from which it could have come was the quarantine. However, on the question being submitted it was asserted by a high authority, that our action could only be taken at a State line. That our citizens might die on the Normannia, but the Government must not directly interfere. The last Section of the Act of 1878 was relied on to sustain that view. But in case of conflict the subsequent statute must govern, and the Act of 1890 was clearly intended to meet just such conditions.

I may remark, in passing, that we see much in the public prints about the President's "proclamation." The President never made a proclamation on the subject. He simply approved a Treasury department regulation made in pursuance of law. The duty of inquiring into the need of the issue of the regulation and the essence of the regulation itself, was one that naturally devolved on the Treasury Department, and in event of an injudicious regulation having been adopted, the person who gives the advice which led to its adoption is generally held to be responsible by the public, notwithstanding the maxim that "Who does it by another, does it himself."

The issue of a general quarantine regulation under the Act of 1878, necessarily caused adherence to the non-interference Section of that Act. Had the regulations been issued under the Act of 1890, the question of interference with State quarantine could not have been successfully raised. The true interpretation of the Act of 1890 must be found as in the interpretation of all other statutes, that it should be construed according to its plain and obvious import. It is not conceivable that the plain and obvious import of the Statute is to require that any operative measures under it must be taken at the line of an adjoining State; thus, for example, in case the cholera at New York had extended to Jersey City, the measures to prevent the spread of the disease would have to be taken at the Pennsylvania line. Such a course would render the Act absolutely useless, as no intelligent measures could be taken by the Government under such restrictions. There is no circumlocution or ambiguity about the Act; its intent was clear, namely, to prevent the extension or spread of certain contagious diseases. It authorized the adoption of regulations and the employment of the force necessary to carry them into effect. The prevention of the spread of a contagious disease from its existing location, or its suppression at that initial point, is in effect the prevention of its spread from one State to another.

Let us suppose that in Sleepy Hollow, on an island in the State of New York, cholera exists. It would surely be a compliance with the requirement to prevent its spread to the State of New Jersey, if the disease were stamped out or suppressed in Sleepy Hollow. It would simply render subsequent operations useless if we were forced to wait until the disease had spread throughout New York, or if the medical inspector armed with a copy of the Statute of 1890, should calmly proceed to the New Jersey line, and there await the coming of the pestilence. The King who placed his chair on the seashore and commanded the tide to recede from the English coast showed exemplary wisdom compared with such an inspector.

A forced construction of a statute, by which it is reduced to absurdity, is not usually tolerated.

But now that neither cholera, small-pox, yellow fever or plague exists in any part of the

States, the Act of 1890 must remain in abeyance and new legislation must be had if Congress intends to establish uniform quarantine at all ports. In practice it has been found, that wherever the quarantine was a source of revenue, the States have usually desired to retain its control, and it is apparent that should Congress forbid the collection of the fees from shipping by any State or municipality, for quarantine purposes, and provide for their care by the Government, the motive for their retention would disappear. It is proposed at this coming session to introduce a bill that will provide that the President shall by proclamation designate at what ports and places quarantine shall be maintained by the Government, to forbid the collection of any fee for quarantine services—except for board of detained immigrants—and to provide for the extension of existing laws to such quarantines as may be so established. The quarantine inspections are maintained for the public good, their value is to the population in the interior not less than to that of the seaboard. Why should the state be burdened with the necessary expenses of protecting the interior?

The Government alone can protect the whole country. Of what avail is it, said Judge Hornblower in a recent paper, to have a well equipped quarantine at New York, while the one at Philadelphia is inefficient, and there is none at all at New Haven?

Besides the question of efficiency, there is the question of the duty of the Government. The Government is obliged to protect the interior, if protection be demanded. It has no moral right to delegate this plain duty to the State of New Jersey or the State of New York. Congress has not hesitated to pass laws concerning immigration, and establish a harbor patrol in New York to regulate the anchorage grounds in New York Bay. Why should it longer hesitate in the matter of quarantine?

The following is the proposed bill:

An Act to amend an Act entitled an Act to Perfect the Quarantine Service of the United States:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled:

That the second Section of the Act entitled an Act to Perfect the Quarantine Service of the United States, approved August 1st, 1888, be and the same is hereby amended so as to insert after the words "at the entrance to Puget Sound" the following:

The President of the United States is hereby authorized to designate from time to time such additional places on the coast of the United States for the establishment of quarantines as are in his judgment necessary to maintain a uniform quarantine servic in accordance with existing laws, and that the necessary expense of establishing such additional quarantine stations shall be borne from the contingent appropriation for preventing the spread of epidemic diseases, for the first year, after which such expenses shall be paid from the annual appropriation for the quarantine service; and be it further provided, that it shall hereafter be unlawful for any State or municipal authority to assess upon any vessel of any nationality whatever, any fee whatever for quarantine purposes.

BOOK REVIEWS.

PHYSICIAN'S VISITING LIST, 1893. P. Blakiston, Son & Co. Price $1.00.

This is the veteran of this useful class of publication. In its forty-second year there are the same characteristics of usefulness that have made this the favorite of the profession for nearly half a century.

DOMESTIC CORRESPONDENCE.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

Sir:—Within the past few years the State of Texas has received notice from the profession as possessing a warm, salubrious climate, favorable to that class of patients who are suffering from diseases of the chest, and it may be proper to call attention to the peculiar advantages of Central Texas, or the mountain region. Its elevation is from 1,500 to 2,100 feet above the sea level, over 200 miles from the gulf, and below the thirty-first parallel, so it has a dry, warm, genial, bracing atmosphere. That it is good for nearly all diseases of the pulmonary organs is demonstrated by many a stout individual who came here diseased and is now well. The writer selected Central Texas as having the best advantages for a member of his family, and is well satisfied in his choice. No hectic, no expectoration, cessation of cough, a gain in body weight and strength, and exhilarated feelings are the result. The town has not been a "health resort," and its new comfortable houses and hotels are not impregnated with the "lurking germs of disease." Frost rarely comes, and a large proportion of the days in the year can be spent out of doors, fishing, hunting, or geologizing and prospecting for minerals. The soil is sandy and the vegetation is sparse, as in all granite formations, hence the water supply carries less organic or vegetable matter than the water in limestone countries, and a minimum amount of inorganic matter. The rainfall is about 24 inches per year, the wind blows gently every day, and evaporation is rapid, leaving little humidity in the soil or the air. "Northers" occasionally come, when patients must stay in doors, but they do not last long, and never bring snow. All except rainy days can be spent out of doors, and frequently these days have only showers, followed by sunshine. Seldom does a "tropical rain" occur.

Meteorological observations for the past eleven months of 1892 give the following monthly mean temperature and number of rainy days:

	Deg. Fahr.	Rainy Days.
January	49	5
February	53	4
March	60	6
April	73	3
May	75	6
June	90	6
July	94	1
August	88	6
September	84	4
October	76	7
November	68	5

The records were taken at 6 A.M., noon, and 6 P.M., and show an average temperature of 72 degrees and 53 rainy days. Respectfully, C. F. DARNALL, M.D.

Llano, Tex., December 3, 1892.

THE USE OF SALICYLATE OF SODA FOR SPRAINS.—M. Labeeb, without claiming any priority, spoke briefly at a meeting of the Society de Therapeutique of the markedly satisfactory result which he had obtained by the use of one drachm of this remedy in twenty-four hours for a tibio-tarsal sprain. The following morning there was no pain, and in four days there was complete cure. His results were equally good in several cases, whether or not the rheumatic or arthritic diathesis was present.—*La Semaine Medicale.*

SYNTHETIC CHEMISTRY seems to have no limits. The latest product which has been successfully made from coal products is camphor. It promises to be cheap and the specimens submitted respond to the most crucial tests.—*St. Louis Med. and Surg. Reporter.*

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SATURDAY, DECEMBER 10, 1892.

PSYCHO-THERAPEUTICS.

This name is used to describe all therapeutics which cures by the intervention of the psychical functions of the sufferer. The first thorough study of this topic was by DR. HAACK TUKE, in which he showed the dominating influence of the mind over the body, and the possibility of curing disease by this power alone. Late authors have divided these remedies into five divisions. The first, *psycho-therapy* is given to all measures which oppose disease by psychical means, or the intervention of psychical functions. The second is *suggestion*, which is the impulse given by one mind to another. This is one of the principle processes by which changes are induced in the mind and organism of the sufferer. The third is called *therapeutic hypnosis*, which signifies normal sleep, induced by suggestion. The fourth means is *hypnotism*, which requires certain abnormal conditions, which when spontaneous are pathological, and when artificial are merely experimental and of little interest in therapeutics. The last has come into great prominence through the studies of CHARCOT, LEIBEAULT and BERNHEIM. Although some wonderful facts have been apparently demonstrated there is a degree of abnormality, with confusion of symptoms and conditions that suggests the empiric stage of the study. Hence, it appears that the efforts to reach the truth along this line of approach are not very promising. The power of suggestion as a remedy where through disease or constitutional conditions the degree of receptivity is strong, is almost marvelous in many cases. This very often extends to hypnotic sleep that is normal. All physicians in a vague, uncertain way, avail themselves of these psychic means, but rarely consider them of scientific interest and worthy of study. DR. VAN EEDEN, of Holland, has in a special study of these measures, declared that the highest attainment of therapeutic art must be sought for in the use of psychic measures. The physician of to-day depends almost entirely upon mechanical, chemical, and electrical remedies, and largely ignores the power of psychic functions. The most advanced studies prove that nearly all the temporary, transient and permanent cures which follow from the use of material remedies, depend more largely on the psychic functions and forces, which are substantially unknown.

The "vis medicatrix naturæ," so frequently mentioned as indispensible is simply this psychic power to withstand hurtful influences, to resist degeneration, and repair injuries. DR. EEDEN urges that hypnotism, clairvoyance, mind reading, and the similar empiric means and measures, used by quacks, be rescued, studied, and made to do service along the line of rational remedies. He considers that psychic therapeutics opens a far wider field for the treatment of disease than the study of bacteriology, and along these two lines the most startling advances of medicine may be expected. All practical physicians recognize the operation of higher and unknown forces in both health and disease. Forces which depress or elate organic functions and antagonize surroundings and therapeutic measures, that can not be foreseen or predicated. Modern psychology shows conclusively that living cells have other than purely chemical and physical qualities. This unknown force is called psychic, and occupies a very important part in the activity of the cell. The study of this has been neglected, and yet every advance of science, both theoretically and clinically, is bringing out innumerable facts, relating to this force, that are not understood or utilized. Psychic therapeutics has begun to be studied along the line of hypnotism. A vast number of people entertain the most extravagant expectations of the value of the mind cure, and christian healing. The power of a suggestive idea is illustrated in every part of the country, no matter what the idea may be. In every consulting room, and sick chamber physicians recognize and use this psychal-therapy, and yet the subject is practically unknown, and without scientific study. DR. HAACK TUKE's work of the influence on the mind on the body, is a most suggestive text-book, and should be read and studied by every physician. Hypnotism can not be ignored, it is a power in therapeutics, although its practical application may be vague and uncertain. Suggestion and all the varied names used to express the psychical force, which is exerted by one over the other, are all dim headlands of an unknown country. A country that belongs especially to the physician and the scientist, and can never be discovered except along the line of exact study and observation.

PROFESSOR VON PETTENKOFER ON CHOLERA.

The *British Medical Journal* for November 19 publishes advance proofs from the *Münchener medicinische Wochenschrift* of an address on cholera by Professor Max von Pettenkofer.

He recalled that many years ago he said that the etiology of cholera was an equation with three unknown quantities, namely: x, a specific germ disseminated by human intercourse; y, a factor dependent on place and time, that he called "local disposition;" and z, the individual predisposition. Places as well as persons often enjoyed immunity, and places which suffered at one time often remained free at another, even when the two factors x and z were present. The determination of y was not as easy as that of the others; but the nature and degree of moisture of the soil had an important influence on this factor.

He thought that the simplicity of Koch's theory commended it to those who only looked at the individual patient, and not at the course of a long series of epidemics. The constant occurrence of the comma bacillus in the excreta of cholera patients indicated that the microbe had something to do with the process, though it was still open to question whether it alone was the cause of the disease.

To test this latter point the Professor obtained some bacilli from Hamburg from Professor Gaffky. A bouillon culture was prepared, and a plate culture from this showed that one cubic centimetre of a thousandth dilution contained numberless comma bacilli, far more than could possibly be conveyed by a man's hand to his mouth. Notwithstanding his advanced age (74), v. Pettenkofer took a light breakfast and two and a quarter hours later, when, according to von Voit's calculations, there could not be so much as 100 cubic centimetres of gastric juice with 0.3 per cent. of hydrochloric acid in his stomach, he took 100 cubic centimetres of a one per cent. solution of bicarbonate of soda; this neutralized the small amount of acid in his stomach and produced a good medium for the development of the cholera spirilli contained in a cubic centimetre of the fresh bouillon culture that he swallowed at a draught. Two days later, severe colicky pains and moderate diarrhœa came on that persisted for six days. During that time the urine was normal, he took no medicine whatever, ate his customary food with a good appetite, pursued his usual avocations without any interruption, and felt perfectly well except for the symptoms mentioned. The stools were examined bacteriologically by Drs. Pfeiffer and Eisenlohr during the duration of the diarrhœa, and were found to be swarming with comma bacilli, yet there were no symptoms of Asiatic cholera. He thought, however, that his experiment might have had a fatal result if it had been carried out in Hamburg, where not only x but y was present in full force.

Professor Emmerich made an exactly similar experiment on himself, with much the same result, except that the colic and diarrhœa were much more severe; otherwise he felt perfectly well.

Von. Pettenkofer considers that these experiments show conclusively that the comma bacillus during its sojourn in the intestines does not produce the specific poison which causes Asiatic cholera, Professor Bauer and Dr. von Ziemssen, both of whom have had considerable experience with cholera, did not think that either v. Pettenkofer or Emmerich had even slight attacks of Asiatic cholera. Von Pettenkofer, while not denying that the comma bacillus has some etiological importance, says he cannot believe it is the x that, without the assistance of y, can cause epidemics of cholera; practically he believes that y, that is the local physical and sanitary conditions, must be attended to in order to make a place cholera-proof.

While these experiments of v. Pettenkofer and Emmerich have eliminated the sources of error that made those of Bochefontaine and Klein fallacious, they have demonstrated what v. Pettenkofer originally denied, that the evacuations of a cholera patient contained the virus at all, either potentially or actually. For in this instance comma bacilli were obtained from the evacuations of a cholera patient, and cultures made from these produced in healthy persons intestinal disturbances with the presence of these bacilli in the diarrhœal stools. And while v. Pettenkofer has made good his challenge of eight years ago to swallow a quantity of comma bacilli, it seems to us that his freedom from other choleraic symptoms was due to the factor z, individual predisposition, rather than to y. In other words we do not agree with the learned Professor that if the same experiment had been performed upon him in Hamburg there might have been a fatal result. In epidemics of cholera only a certain per cent. of the population of a place is attacked, notwithstanding the fact that the "local disposition" is the same for all, though there is always an increase in the number of cases of diarrhœa, so the factor of individual predisposition must be invoked to explain the immunity of portions of the population of a cholera infected city.

And while the ingestion of the cultivations of cholera bacilli in these two cases has proved to be comparatively harmless, it has not been demonstrated that a similar experiment with a number [illegible] men in all sorts and conditions of life would not cause a certain number of fatal cases of cholera.

Symphysiotomy.—The reference to the case of Dr. Barton Cooke Hirst, on page 675 of our last issue, should have been credited to *The Medical News* instead of *The Maryland Medical Journal*.

THE INSURANCE SPONGE.

The sponge is an animal. That question is settled. The vegetarians have ceased to claim it. Like the vanquished party in the recent presidential contest, they surrendered reluctantly, but they surrendered.

"In its simplest form"—so the naturalists inform us—"the sponge is homologically a single animal with the internal structure and function of a colonial organization."

There are many varieties of sponge. The *spongia equina* is the horse sponge of the bath room. The *spongia dura* is the Hardhead found in America. The cup sponge and glove sponge are fine species used in surgery.

All these are marine varieties. "None of them seem to be truly parasitic—that is, capable of living upon the substance of other animals."

But there are land sponges. These also are single animals with the structure and function of organized colonies. Unlike the sea sponges, these land lubbers are truly and with emphasis parasitic—that is, they actually do live upon the substance, the juices, the circulating medium of other animals.

The tramp is a sponge—a combination *spongia dura* and *spongia equina*. He has facial petrifaction united with the peripatetic propensity of the walking delegate.

A sponge possesses the property of enormous absorption and retention; but of its own volition it disburses nothing. Firm compression is necessary to secure disgorgement. *Spongia cerebriformis* is a common enough species, but *spongia corda*—the sponge with a heart—is an exceedingly rare, but not inconceivable variety.

This, by natural gradation, brings us to the subject under consideration.

A Life Insurance Company is a sponge. It belongs to the family of *octopodo millipoda*. It has a head-centre; grasping arms, which extend to immense distances; agents as suckers; and medicine men as tentacles or feelers. Through its agents its sucks into its colonial meshes such an enormous surplus of nutriment that it permits its chief sucker to retain fifty per cent. of the premium blood drawn from the veins of each newly captured victim; while its corpulent head-centre appropriates an amount of this same vital fluid which if transmuted into coin would equal from ten thousand to seventy thousand ducats annually.

The tentacles decide as to the sanitary condition of the victims. They receive scanty pabulum for their services which are, or should be, of greatest value.

The judgment of other medical men (especially those of recognized prominence) as to the ability and fitness of the tentacles is constantly sought by the head-centre. The opinion desired may be of immense importance. It may insure success or ward off disaster. But the insurance octopus sponges the opinion. He disgorges no ducats; he emits not even a worthless thank.

He propounds in a circular a series of questions as to the age of the tentacle whom he purposes to employ; when and where he was educated; his qualifications as a diagnostician; the acuteness of his senses, especially his hearing; the amount of his business; his shrewdness; his mental and moral integrity; his ability to resist the allurements of the willing victim and the anxious sucker; his social and professional standing; and then he craftily pretends that the valuable time spent in answering fully these and many more searching questions is for the sole benefit of the proposed tentacle; while at every moment he knows that the pretense is a false one and employed only to excuse sponging the wished-for information from the meek and complaisant physician.

More than this. He is guilty of the contemptible meanness of promising that if the friendly tentacle shall be maligned and betrayed, the gratuitous betrayal will be guarded sacredly as "confidential."

In the good time coming—slowly coming—some insurance millipod may, by evolution or compulsion, emerge from his spongy condition. Then he will send with his circular questions not only the generous two cent postage stamp, but a suitable fee for careful answers. Then he will frankly acknowledge the truth that the information sought is for the protection of the organization. Then he will be independent enough and shrewd enough to proclaim that (whatever other Associations may sneakingly do) his company is able and willing to pay—and actually does pay—for all services rendered.

When this salutary transformation shall have been effected, the busy doctor will no longer throw, with resentful disgust, the insurance circulars into the waste basket; but he will regard himself as the compensated agent of a cordate and honorable Association which deserves respect and success and whose interests he will gladly seek to promote.

TWO MEDICAL COLLEGE ASSOCIATIONS.

The bulk of the last issue of THE JOURNAL consisted of the most excellent papers presented at the last meeting of the Association of American Medical Colleges, together with the Constitution and By-laws of the above Association and the recently formed association sailing under the title of the Association of Southern Medical Colleges. It is a conceded fact that the maintenance of an association representative of the colleges of this country will tend to subserve their best interests. This has been proved by the history of like associations representative of all branches of the professions and various educational bodies. It remained for the representatives of the leading colleges of medicine to arrive at this conclusion in a period of the last few years only. Consequently there was organized at Nashville, Tenn., in 1889, the present National body with representatives from fifty-four colleges, representing all sections of the country. This Association now contains a membership of seventy colleges. Since the last meeting in Detroit the few representative colleges not then members have signified their intention of being represented at the forthcoming meeting. The *organization of the new college association* is to be deplored from any view that may be taken. There is absolutely no excuse for its existence. It was organized by the representatives of a few colleges located in a sequestered portion of the Southern States. We are of the opinion that the large number of Southern schools at present members of the National Association will retain their membership. The colleges represented in the new association are not recognized as high grade schools. They are not willing to maintain the requirements demanded of the National body notwithstanding the requirements of the latter Association are not as high as they should justly be. We invite the attention of the readers of THE JOURNAL resident in the immediate vicinity of the colleges belonging to the new association, to a perusal of the requirements for entrance examination in these schools. It will readily be *inferred that the people of the South are not desirous* of a very high grade of intellect in their medical men. We are of the opinion that the quickest and most certain method of settling the question of medical education in this country is by efficient medical legislation. The work of a few State Boards fully confirms us in this opinion. The tabulated statistics of the result of the examination of candidates to practice in five different States including 1,950 practitioners, is fully confirmatory of our opinion. We trust the alumni and friends of the colleges belonging to the new association will secure a copy of DR. MILLARD's paper read at the last meeting of the American Academy of Medicine, and see for themselves just what character of work is being done by these schools. In view of the decided action of the American Medical Association at its last meeting we feel it our duty to direct attention to this question. We are of the opinion that the profession as a mass have tolerated the low grade medical college about as long as they will. In the future a more distinct line of demarkation will be drawn between the high and low grade medical college. The statistics of the various State Boards will classify them where they belong and their *clientele* will consist of the scavenger element.

THE court report of the celebrated Alice Mitchell case may be obtained by addressing Dr. F. L. Sim, Memphis, inclosing ten cents in postage stamps.

THE PROPOSITION TO REVISE THE CODE OF ETHICS.—*Dear Sir:*—Members of the American Medical Association having been invited to express their views concerning the proposition to revise the Code of Ethics, I have the honor to state the reasons why, together with many associates, I do not think it wise or expedient to make any change in this admirable system of morals.

1. It would not be wise to alter the code in any particular, because its teachings are salutary, its phraseology is lucid, and its aims are noble; qualities which surely enhance its value as a criterion of medical morals to young physicians entering upon their professional duties.

2. It would not be wise to revise the code; because it does not contain any superfluous statements and because it is the best guide to all physicans in their various relations.

3. It would not be wise to change, even in the slightest degree, the verbiage of the code; because the words are simple, the language is pure and good, and the presentation of the subject is clear and logical.

4. It would not be wise to modify the code; because all its provisions are distinctly stated, and it does not contain any expressions that can be justly condemned or that require modification.

5. It would not be wise to make additions to the code; because it embodies all that is needed in any system of medical morals.

6. It would not be expedient to further consider the revision proposition; because a revision of the code would be likely to cause changes which would be very objectionable to great numbers of members, and which would doubtless excite much discontent.

Continued agitation of this question could serve no good or useful purpose and would occupy precious time, which otherwise might be profitably employed, as in the study and discussion of scientific topics.

I hope that the committee to which the revision proposition has been referred will report against any kind of revision, and that the Association will refuse to entertain further propositions tending to modify the code in any respect, particularly since its spirit has been unequivocally indicated by the most ample and liberal explanatory declarations. A CONSERVATIVE MEMBER.

MISCELLANY.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from *November 26, 1892, to December 2, 1892.*

Capt. Henry P. Birmingham, Asst. Surgeon U. S. A., is relieved from duty at Boise Bks., Idaho, to take effect upon the expiration of his present leave of absence, and will then report in person to the commanding officer, Ft. Grant, Ariz., for duty at that post.

By direction of the Secretary of War, Par. 3, S. O. 232, October 3, 1892, from this office, directing Major Robert M. O'Reilly, Surgeon U. S. A., to report for duty as attending surgeon in this city on December 15, 1892, is amended to direct him to so report on January 15, 1893.

Capt. Eugene L. Swift, Asst. Surgeon U. S. A., ordinary leave of absence granted is changed to leave of absence on surgeon's certificate of disability, and extended as such two months.

First Lieut. Samuel R. Dunlop. Asst. Surgeon U. S. A., extension of leave of absence granted is further extended one month.

Capt. Junius L. Powell, Asst. Surgeon U. S. A., so much of Par. 2, S. O. 232, A. G. O., Oct. 3, 1892, as directs him to repair to Ft. Monroe, Va., for duty at that post, is revoked, and he will upon the final abandonment of Ft. Randall, S. Dak., report in person to the commanding officer, Jackson Bks., La., for duty at that post, relieving Capt. Wm. C. Borden, Asst. Surgeon. Capt. Borden, on being relieved by Capt. Powell, will report in person to the commanding officer, Ft. Adams, R. I., for duty at that post.

Major William R. Gardner, Surgeon U. S. A., is relieved from further duty at Angel Island, Cal., and will report in person to the commanding officer, Ft. Keogh, Mont., for duty at that post.

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ORIGINAL ARTICLES.

MARINE-HOSPITAL RATION.

Read before the Section of Physiology and Dietetics, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY GEORGE W. STONER, M.D.,
SURGEON UNITED STATES MARINE HOSPITAL SERVICE.

The ordinary articles and quantities of subsistence supplies for ten thousand (10,000) full rations are:

Meat, fresh and salt,	8,000 lbs.
Fish, fresh and salt	2,000 lbs.
Milk	800 gal.
Butter	1,000 lbs.
Eggs	*300* doz.
Lard	300 lbs.
Bread stuffs and other prepared farinaceous food	10,000 lbs.
Vegetables	10,000 lbs.
Fruits, fresh and dry	1,500 lbs.
Tea	100 lbs.
Coffee	300 lbs.
Sugar	1,500 lbs.
Molasses or syrup	25 gal.
Salt	500 lbs.
Pepper	25 lbs.
Vinegar	25 gal.
Pickles	25 gal.

Meat, the first article on the list, especially beef, is the most nutritious of all animal foods. It is easily cooked, very digestible, and perhaps more extensively consumed than any other animal product. The composition of fresh beef—the relative proportions of water, nitrogenous matter, fat and salts—the mean calculated from Pavy's table of lean and fat beef, Yeo's table of three different examples of butcher's beef (very fat ox, moderately fat ox, and lean ox), and Parke's table for calculating diets, including meat of best quality with little fat, like beef steaks, uncooked meat of the kind supplied to soldiers—bone constituting one-fifth ($\frac{1}{5}$) of the soldiers' allowance, and uncooked meat of fattened cattle, and Rohe's table of animal foods, may be given approximately correct, as follows:

Water	69.99
Nitrogeneous matter	19.40
Fat	8.57
Salts	2.04

It is proper to state, however, that the proportion of fat in a very fat ox is given as high as twenty-seven per cent. and Prof. Atwater, as quoted by Billings, places the difference between different parts of well fattened animals, as follows:

Beef, round	8.1
Beef, neck	14.3
Beef, sirloin	14.3
Beef, side	*21.7*

The first table may also be applied to and accepted as approximately correct for moderately fat mutton and pork, though the fat of both these articles of animal food varies from six to forty per cent.

Moderately fat or lean mutton is as easy of digestion as beef but very fat mutton is hard of digestion and unsuitable for invalids.

Pork is not included in the specified ration of the Marine Hospital, but is allowed in the supply table, and while hard of digestion and less adapted than mutton as a food for invalids, nevertheless serves a useful purpose; and salt pork and bacon, like other salt meats are not only popular foods, but from the small proportion of water they contain, also decidedly advantageous from an economic standpoint; and when used with other lean meats, such as rabbit, veal and poultry, and also with other articles rich in nitrogenous matter, as for example in the palatable dishes of bacon and eggs, liver and bacon, and pork and beans, they serve "to establish a proper proportion in the supply of nitrogeneous and carbonaceous material" and the combination is founded on a rational principle.

It is claimed also that in some cases of dyspepsia, salt and smoked meats are comparatively easy of digestion, that they are not so likely to give rise to acid fermentation in the stomach, being less readily decomposed. Niemeyer mentions a remarkable case of this kind—the patient being obliged to limit his diet to lean and smoked ham, sea biscuit and a little Hungarian wine.

FISH.

There are many kinds of fish used as human food. They vary greatly in composition, nutritive value and digestibility. The eel, herring, mackeral and salmon contain large proportions of fat and are exceedingly nourishing to persons of good digestion, but the lighter kinds are, as a rule, more suitable for invalids and persons with delicate stomachs.

Dujardin-Beaumetz, according to Yeo, "divides fish from a nutritive point of view, into three classes, 1. Fish with white flesh, like the whiting and sole. 2. Fish with red flesh, like the salmon, and 3. Fish with greasy flesh, like the eel." The last he considers most nourishing, but least digestible.

The following table of mean composition of white-fleshed fish, including the sole, haddock, carp, white-fish and pike, compiled from different analyses represents in a general way the quality of fish used in the Marine-Hospital ration.

Water	79.90
Nitrogenous matter	17.57
Fat	1.06

Some kinds or varieties of fish are said to improve in flavor and tenderness by being kept for a short time, but as a rule, fish cannot be cooked or eaten too soon after being taken from the water; and salted fish is difficult of digestion and not very nutritious. Fish of all kinds are in the best condition for the dietary just before spawning; during that process, the flesh loses its edible quality and becomes watery and flabby.

The theory that fish is an "intellectual" or "brain food," because of the phosphorus it contains, does not receive much support from recent analyses—good beef being equally rich or *poor* in phosphates. But fish is more easily digested than beef, and, therefore, better adapted for *brain workers.*

Yeo states that Louis Agassiz spoke of fish as food "refreshing to the organism, especiallly after intellectual labor; not that its use can turn an idiot into a wise or witty man, but a fish diet cannot be otherwise than favorable to brain development."

MILK.

Milk is not only a perfect food, containing as it does in proper proportions the four classes or grand divisions of alimentary principles necessary for the support and development of the young of all mammalian animals, but it is the important fluid upon whose analysis the said classification was originally founded. It is the principal constituent of various diets, and is capable alone of sustaining life. It is the most serviceable food for invalids, and as Robert's Well says, "All plans of feeding the sick on liquid food, center round milk." It varies in composition—in the relative proportions of nitrogenous matter, fat, carbohydrates and salts, and is of course, largely composed of water, as shown by the following table of mean composition:

Water	87.20
Nitrogenous matter	3.57
Fat	3.68
Carbohydrates	4.84
Salts	.70

The above table is the mean of three analyses and corresponds closely to the report of the French commission, appointed by the Prefect of Police of Paris. From the analysis of milk, made in various countries the commissson fixed the minimum standard of good milk at—

Water	88.50
Casein, extractives and salts	4.00
Butter	2.70–3.00
Lactin	4.50

Casein is the chief constituent of the nitrogenous matter (the albuminates) but differs from ordinary albumen in not being coagulated by heat. Its fluidity in fresh milk is due to the alkaline or neutral calcium phosphates with which it is combined; but the addition of any acid capable of decomposing or converting the alkaline phosphate into an acid phosphate will cause immediate coagulation or precipitation of casein, and the formation of the so-called curd —the fluid portion from which it separates is called whey. If milk is allowed to stand any length of time, spontaneous coagulation takes place by the development of lactic acid. Warmth hastens this process, and it is a common observation that milk "turns sour" very rapidly in the heat of summer, or during a thunder storm.

The salts contained in milk of average quality amount to about 0.7 of 1 per cent. Calcium phosphate is a considerable and important constituent. Milk also contains chlorides of sodium and potassium, phosphates of soda, magnesia and iron. Butter is another name for the fats or glycerides of milk obtained by the familiar process of skimming and churning, and will be referred to again further on. Lactin is the carbo-hydrate of milk and is known also as lactose or milk sugar.

SKIMMED MILK.

Milk from which the cream has been removed is, of course, less rich in fatty matter than fresh milk, and while more easily digested and useful in certain forms of disease, and as a *starvation* diet in the treatment of obesity, is, I believe, seldom used *intentionally* in the Marine-Hospital ration. It contains, according to the mean of three different analyses by Letheby, Bauer and Church:

Water	89.90
Albuminates (nitrogenous matter)	3.36
Fat	.84
Lactose	5.09
Salts	0.80

WHEY.

As before mentioned, whey is the fluid portion of milk from which the curd has been separated by coagulation. It is sometimes used as a poor substitute for milk and is readily made by adding a small quanity of lemon juice to milk, one or two teaspoonfuls to a pint, and boiling it. Whey contains only a small portion of the elements of the milk, but it is a pleasant drink and more or less useful in certain febrile and stomach affections, and is a popular "cure" at some of the alkaline and salt spring health resorts of Germany and Switzerland. The mean composition of whey, according to Bauer, is:

Water	93.3
Albuminates	0.82
Fat	0.24
Lactose	4.65
Lactic Acid	0.33
Salts	0.65

CREAM.

Cream is that portion of the milk which rises to the surface when the liquid is cooled and at rest. It varies in amount according as the milk is rich or poor, and also according to the means or carefulness by which it is separated. It varies in composition, and the range of variation of the relative quantities of its constituents is so great that no satisfactory table can be given. The mean of two different analyses gives:

Water	56.5
Casein	3.8
Fat	35.8
Lactose	2.6
Salts	1.1

According to Church, the variation of water alone is from 28 to 68 parts in 100. Bauer places the extremes at 22 and 83, and states also that the fat varies from 8 to 70.

BUTTER.

Butter is one of the most popular, agreeable and digestible of the animal fats, and while used almost exclusively as an accessory to other articles or as the necessary grease and flavor in the process of cooking various food products, is *alone* a very valuable food. It is made by the well known process of churning and varies greatly in quality and flavor. It contains a variable amount of casein which is taken up from the milk. Rancid butter is unfit for use, and butter is considered good or bad according, as it contains much or little casein. The rancidity of butter being due to changes in the fat, brought about by alterations in the casein.

The unpleasant and peculiar flavor or taste which some butter possesses is frequently due to the strongly flavored food given to the cows, or which they find in the pasture—as for example, garlic. But another and perhaps the most frequent cause of strong or tainted butter, is the absorption of odorous vapors or volatile flavors from the atmosphere in which it is placed, as for example, the vapors from cheese and meat, and especially from any and every kind of decaying vegetable or animal matter; and these remarks apply to milk and butter alike. The following table shows the average proportions of the most important constituents of good butter, being the mean of *four different analyses:*

Water	10.4
Nitrogenous matter (casein)	.6
Fat	86.5
Carbo-hydrates (Lactose)	0.4
Salts (common salt)	1.1

BUTTERMILK.

The fluid portion of the cream that is left after the butter is separated by the process of churning is a nutritious drink and food. It is easily digested and well adapted for persons suffering from stomach disorders, epecially gastric catarrh, and in the "Milk Cure" of albuminuria and diabetes it *may be* substituted for fresh milk. Niemeyer states that in some patients, fresh milk is not so well borne because it readily curdles in the stomach and forms large, firm lumps, while in the buttermilk, the casein is already curdled, but finely divided. He also quotes the prescription approvingly, "When the patient is hungry, let him eat buttermilk; when he is thirsty, let him drink buttermilk." The *composition* of buttermilk as shown by the mean of *different* analyses is:

Water	90.
Nitrogenous matter (casein)	4.2
Fatty matter (butter)	0.4
Lactine or lactose (*milk sugar*)	4.3
Lactic acid	

EGGS.

Fresh eggs, raw or lightly cooked, are very digestible and highly nutritious. They contain all the elements of the blood and are, like milk, almost a perfect food. The shell consists largely of carbonate of lime, but contains also a small proportion of phosphate of lime and nitrogenous organic matter. It is lined by a delicate membrane which encloses the white of the egg. The yellow or yolk of the egg lies within the white and is also enclosed in a thin membrane. Hard cooked eggs are not easy of digestion if eaten alone, but if taken together with other food and thoroughly masticated they are not very objectionable to a healthy stomach. According to Church "the average weight of a hen's egg, shell and contents is about one and three-fourths (1¾) ounces. It becomes lighter by being boiled, losing a little water." Parkes places the average weight at about two ounces, and calculates ten per cent. shell 22.8 albumen and fat, and 67.2 water, and states that "if an egg weighs two ounces, it contains nearly two hundred grains solids. Pavy, quoted by Yeo, calculates that such an egg would yield 110 grains nitrogenous substance, 82 grains of fat and 11 grains of saline matter. The mean of several analyses shows that the white of an egg has the following composition:

Water	85.2
Nitrogenous matter	12.3
Fat	1.1
Carbo-hydrates	
Salts	.8

The yolk of the egg shows a higher degree of richness. It contains:

Water	51.1
Nitrogenous matter	15.6
Fat	30.8
Carbo-hydrates	0.1

The mixed whites and yolks of hen's eggs, according to Church (shells excluded) contain:

Water	71.7
Albumen and casein	14.
Oil and fat	11.
Membranes and extractives	2.
Mineral matter	1.3

BREAD.

Of all the various cereals used in making flour, wheat is of first importance and yields the best bread. Wheat bread is an acceptable and nutritious food and is more extensively consumed than any or perhaps all other vegetable products. Wheat, like all other articles of food, varies in composition, but the variations in the grain are chiefly limited to the relative proportions of starch and nitrogenous matters. The differences in composition are not only shown between the different varieties of the grain, as for example, the relatively small proportion of albuminoids in the soft, opaque grains of white wheat, and the large proportion in the hard, translucent varieties; but differences also appear in wheat of the same variety, accordingly as it is grown during a dry or wet season. Wheat grown during a fine, dry season contains less starch and more albuminoids than wheat produced in a wet season. The wheat grain contains a middle part or kernel and six thin coverings or coats. The several coats or coverings become thinner and whiter and probably more nutritious as they approach the kernel. Meal is produced by grinding wheat between millstones, and by sifting, winnowing and regrinding, the meal is separated into a number of different products. In some processes of milling the outer coat or fine bran is removed by a previous operation, and in roller milling the germ of the grain is also as a rule removed. In the older process of milling only three different degrees of fineness are recognized—flour, middlings and bran. In the new systems many different grades are produced. Fine flour, seconds flour, tails, sharps, pollards and bran are only a few of the numerous products. In this small classification the first three are considered *flour*, the remainder bran. The thin outside coat of wheat is very indigestible, being largely composed of silica. Bread made from the *finest* wheat flour is as a rule, very digestible, and is almost entirely taken up or absorbed in the process of digestion. It is, therefore, of the greatest value to persons or patients of weak digestion and looseness of the bowels. To obviate or counteract the constipating effect of such bread, bran, rye, cornmeal and molasses are frequently added, forming the different varieties of graham or brown bread. Bread, on the other hand, made from the coarser grades of flour is considered less digestible in proportion as the flour contains the outer or inner scales of the grain, the relative proportions of silicious matter and woody fibre becoming less and less as they approach the center. The indigestibility or low nutritive value of this quality of bread is due to the fact that its nutritive elements are hurried through the bowels by reason of the excessive irritation produced by the indigestible silica, etc., which may also carry away other nutritious material before digestion has been completed, and thereby acutally lessen nutrition. For those who are over-fed and need a laxative, it might be of great value; but if this action is desired, it may be brought about more readily and agreeably perhaps by the use of the whole grain in the form of "cracked wheat" porridge with cream and sugar.

The mean of two different analyses shows that wheat contains approximately:

Water	14.
Nitrogenous matters	11.7
Fatty matters	1.4
Starch, with traces of dextrine and sugar	68.4
Cellulose (vegetable or woody fibre)	2.6
Salts, potash, soda, lime, magnesia, phosphoric acid, etc	1.7

WHEAT FLOUR.

Water	13.93
Nitrogenous matter	9.7
Fatty matters	0.9
Starch, etc	74.2
Cellulose	0.5
Salts	0.6

These tables are of necessity only approximately correct. In some of the harder varieties of wheat—especially those grown in Italy, the relative proportion of nitrogenous matter, gluten and soluble albumen, is greater; and according to Yeo, the proportion of starchy substances in different qualities of wheat ranges from sixty (60) to ninety (90) per cent. Besides the gluten (which is composed of several distinct substances) and the soluble albumen, another nitrogenous substance, termed *cerealin*, a form of diastase or ferment is found in wheat. Cerealin has very active properties, is capable of changing starch into dextrine, sugar, and lactic acid, and is therefore a valuable aid in the process of digestion. But as this substance is found mostly in the outer scales of the wheat grain it is a constituent of the bran and the coarser grades of flour, and the very white or *finest* flour is therefore deficient in this important element; and when in the processes of high milling, the germ of the grain, which contains the diastase proper, is also removed, the resultant flour is beautifully white, free from odor, and superior to any other quality so far as starchy or heat giving matter is concerned, but as a flesh former it must be regarded of less value. The germ is not only rich in nitrogenous matter, but it contains also a large proportion of fat or oil, and phosphoric acid.

"The following analysis," according to Church, "was made on a pure sample of flattened germs from a roller mill."

Water	12.5
Albuminoids. disastase, etc	35.7
Starch, with some dextrine and maltose	31.2
Fat or oil	13.1
Cellulose	1.8
Mineral matter	5.7

This analysis also showed that 60.6 per cent. of the mineral matter was phosphoric acid "so that the original embryos contained 3½ parts per hundred of this valuable constituent of bone," and three times the proportion of nitrogenous matter and more than six times the proportion of fat or oil in the whole wheat grain. He adds, however, "that the albuminoid matter included little or no tenacious gluten, but a considerable quantity of the diastatic ferment. The composition of bran varies in proportion to the number of coatings or coverings removed from the outside of the grain.

The following table, also quoted from Church, shows the composition of "a rather coarse bran."

Water	12.5
Albuminoids and cerealin	13.3
Indeterminate nitrogen compounds	3.1
Starch, with some maltose	43.6
Fat	3.5
Cellulose	18.0
Mineral matter	6.0

The separation of this coarse bran from flour is certainly wasteful, but as an article of diet it is indigestible, not only on account of its mechanical condition, but also by reason of the large proportion of cellulose (woody fibre) and silicious matter it contains. But as before stated, the fibrous and silicious matter is found in the outer coverings of the grain, and if these are first removed and the decorticated grain is then thoroughly ground, the best *(not the finest, whitest)*, flour will be produced.

Bread making may be regarded as the first process in the digestion of wheat flour. The flour is rich in nutritious elements, but in order to be at all palatable or digestible, it must first be mixed with water and salt, made into dough or paste and then baked into firm and porous bread. The porosity is produced by the development or generation of carbonic acid gas within the dough, or by forcing it in from without before the mass is placed in the oven. There are several ways of effecting the process.

First.—By the addition of *yeast or leaven* fermentation takes place and carbonic acid and alcohol are produced. Both of these products escape almost completely during the process of baking; but the carbonic acid gas in its evolution and dissemination through the lump, causes numerous bubbles, and these remain after the gas has escaped and thus the bread becomes porous.

Second.—By the addition of an alkaline carbonate or bicarbonate, the carbonic acid being generated or set free upon the application of heat.

Third.—By the use of *baking powder*.

Fourth.—By forcing the gas in from without, or mixing the flour with water highly charged with carbonic acid gas in an iron vessel under pressure. Bread made by the latter method is called "aerated." The advantages claimed for aerated bread over fermented or yeast bread, are its lightness and dryness and its freedom from the dangers attending the older process of allowing fermentation to proceed too far or not far enough before the *sponge* is placed in the oven, and thus obtaining a sour (acetic acid) taste, or on the other hand a *heavy* loaf. But here the baker's art must *leaven* the process.

Bread varies greatly in digestibility and nutritive value, as well as in chemical composition. The mean of three different analyses is shown in the following table:

Water	37.07
Nitrogenous matter	7.91
Fat	1.39
Carbo-hydrate (starch, dextrine, etc.)	50.14
Salts (including common salt added to the dough)	1.16

OATMEAL.

Oatmeal is a very nutritious food, the richest of all cereals in nitrogenous matters and fat. Its composition, according to Dujardin-Beaumetz, is:

Water	8.7
Fats	7.5
Starch	64.0

Nitrogenous substance	11.7
Salts	1.5
Cellulose and other substances	6.6

It contains a large proportion of indigestible cellulose, but it is easily cooked and is the best food product we possess for making porridge and gruel. It is also sometimes made into cakes, but it is not adapted for bread making, the nitrogenous matter not containing a sufficient amount of adhesive gluten

INDIAN CORN.

Indian corn is produced and consumed in immense quantities in different parts of the world, but principally in North America, the land of its nativity, and especially in the United States. Indeed, its chief preparations, johnny-cake, hoe-cake, mush and milk, and not forgetting hog and hominy are as indigenous as the plant itself.

The whole mature grain is sometimes used as human food, after having been parched and is said to be convenient and valuable to travellers in the Eastern countries. The whole grain is also used in the familiar form of "green corn" and if taken at the proper time and properly cooked, it is not only digestible and nutritious but, if eaten with good butter and salt, delicious.

Corn meal is much coarser than wheat flour and is not so readily cooked, but with proper care and sufficient cooking it can be made very digestible, the only indigestible part being the thin silicious skin or coving. It is not well adapted for making loaf bread on account of the difficulty of baking the central portion, but for Johnny cake, mush and milk, griddle cakes, fried mush and muffins, it is excellent; and when mixed with wheat flour in the preparation of these or some of these *good things*, they become even more palatable and digestible.

Hominy is a popular article of food in some parts of this country, especially in the Southern States. It is the mature grain from which the heart or kernal and skin has been removed. The finer meal cornstarch, is also extensively used and served in the form of *blanc-mange*. The various preparations of corn meal are suitable articles of diet for all persons of good digestion, but in persons with irritable mucous membranes, they are sometimes the cause of intestinal disorders and diarrhœa; while in some cases of torpidity of the bowels, nothing better can be prescribed.

The composition of corn, according to Church, is as follows:

Water	14.2
Albuminoids	9.0
Other nitrogenous compounds	0.3
Starch, etc	66.5
Fat	5.0
Cellulose	3.0
Mineral matter	2.0

According to Parkes the relative proportion of fat is 6.7, carbo-hydrate, 64.5.

RICE.

Rice is the main food of at least one-fourth of the human race. It is grown in nearly all parts of the world where the temperature is high enough for its cultivation. South Carolina is its chief source in this country.

Rice is of less nutrient value than corn, being comparatively poor in nitrogenous matter, and very poor in fat and mineral matter. It consists chiefly of starch, and in composition is not unlike the potato. It is very digestible and is frequently prescribed for patients with weak digestions, and when properly steamed and eaten with milk and cream is nutritious and palatable.

It has the following composition (Church).

Water	14.6
Albuminoids, etc	7.5
Starch, etc	76.0
Fat	0.5
Cellulose	0.9
Mineral matter	0.5

BEANS AND PEAS.

The ripe seeds of many of the leguminosa are used as food; they are all rich in nitrogenous matter. This consists chiefly of vegetable casein or *legumin*, and in quality and nutritive value far exceeds the wheat grain. Beans and peas, owing to the large proportion of albuminates they contain should always be eaten with other foods rich in starch and fat or oil. They should be boiled slowly and for a long time, otherwise they will not be digestible.

The composition of beans and peas is about as follows:

BEANS

Water	14.0
Nitrogenous matter	23.3
Fats	3.
Carbo-hydrates	57.2
Salts	3.

PEAS.

Water	14.6
Nitrogenous matter	22.3
Fats	1.8
Carbo-hydrates	55.8
Salts	2.5

They also contain a small proportion of cellulose. The pods of beans when green and unripe are a popular food, and if properly cooked are very palatable and digestible. Unripe or green peas are also extensively used; they contain a considerable amount of sugar and are easy of digestion.

POTATO.

The potato grows in temperate climates: it is very productive and when properly cooked, palatable and digestible. It is eaten daily by millions of people and was until a comparatively recent time the chief support of a whole nation. It is deficient in nitrogenous matter and salts, but the starch of which it is largely composed is easy of digestion and when eaten with milk or rather buttermilk which is rich in nitrogenous matter, the potato forms a good and economical food.

Potatoes are said to be waxy, or watery, or mealy, according as they are grown in bog lands or in sandy soil; but the potato of sandy soil, and of the very best quality is not infrequently rendered *waxy* or *watery*, and indigestible through the ignorance or carlessness of the cook.

The juice of potatoes contains vegetable acids and their salts and a small quantity of albuminous matter, and the mealiness of the potato depends upon the coagulation of the albuminous constituents and absorption of the acid watery fluid. If the potato is not properly cooked, the granules do not take up the watery fluid, the cells do not become properly distended and separated and the consequence is a waxy, watery or soggy lump.

Potatoes should be boiled in their skins or jackets and in salt water. The boiling must be complete and proceed slowly, otherwise, the starch will be undigested and the albuminates and cellulose will be hard. Steaming is the best method, provided the steam is not super-heated.

The composition of the potato as given by Church and which corresponds practically with the mean of three other analyses is:

Water	75.
Albuminoids	1.2
Extractives, as solanin and organic acids	1.5
Starch	18.0
Dextrine and pectose	2.0
Fat	0.3
Cellulose	1.0
Mineral matter or salts (lime, potass. soda)	1.0

Other roots, tubers, and bulbs used to a limited extent in the Marine Hospital ration are carrots, turnips, parsnips, beets and onions. They all contain about ninety per cent. of water and a relatively small proportion of nutritious substances.

The turnip is the least nourishing; it contains no starch and only 0.5 albuminoids. Its chief constituent is a jelly like substance of the *pectose* group. It contains 1.8 cellulose and 0.8 mineral matter (Church.)

The composition of carrots differs slightly from that of the turnip. The relative proportion of pectose etc., is higher and the carrot also contains a considerable quantity of sugar.

The parsnip is similar to the carrot in composition, but it contains less water, a little more sugar and some starch, the latter not being present in the carrot. The parsnip if properly cooked is a very palatable accompaniment to salt fish or beef.

The beet root contains more sugar and also more cellulose than any of the other roots mentioned. It is cooked in various ways and is largely used in salads and pickles.

The onion is remarkable for its strong smell and taste, due to a minute quantity of volatile oil and sulphur. It is not very nutritious, but more so than the turnip. It is used quite extensively however, both as a vegetable and flavor for other foods, and is a wholesome and palatable food. In its unripe or green state it is used as other green vegetables and also as a constituent of various salads.

The green vegetables, such as cabbage, cauliflower, spinach, tomatoes, lettuce, asparagus and celery, like some of the roots and tubers are of comparatively low nutritive value, but they all contain important salts. They are greatly improved by cultivation and if eaten in their young and tender state before the cellulose has hardened, are comparatively easy of digestion.

FRUITS.

Fruits are important additions to the dietary, their positive nutritive value is low, but they contain valuable salts, a considerable quantity of sugar (notably the grape) and a very small proportion of nitrogenous matter. Many fruits also contain a jelly like substance called *pectin*. Fruit is especially useful in the dietary of persons who have a tendency to constipation and to the gouty condition. The salts upon which their chief value depends are combinations of vegetable acids with alkalies, particularly potash. Fruits are also exceedingly valuable as antiscorbutics.

The popularity of fruits as an article of the dietary is due, however, rather to their refreshing taste and the stimulus they give to weak appetites than to any nutritive value which they possess. Dried fruits are relatively more nutritious; they contain a larger proportion of sugar and less water.

Lemons, oranges, apples, peaches, prunes, raisins and currants are used in the Marine Hospital ration.

SUGAR.

Grape sugar or glucose is found in all sweet fruits, but the sugar contemplated in the food supply table of the Marine Hospital service is the more familiar kind derived from the sugar cane and known as cane sugar. Cane sugar is valuable as a food, but is chiefly used in addition to other foods to sweeten and render them more palatable. It is however not absorbed until through the process of digestion it is converted into grape sugar.

Molasses is the fluid portion left after the crystallized sugar has been separated from the juice.

Salt, pepper and vinegar are used as condiments. Salt (chloride of sodium) is the most important. It is not only useful and necessary as a condiment but it also aids digestion.

According to Church, it "suffers certain changes in the human body, and is not merely taken to be excreted. Its chlorine helps to furnish the hydrochloric acid of the gastric juice and the chlorine of the chloride of potassium found in red blood corpuscles and in muscle. Its sodium forms part of the soda salts, which are among the characteristic consituents of the bile, and of the phosphate of soda of the blood."

Vinegar is extensively used in sauces and salads of various kinds, and in the preparation of pickles.

TEA.

Tea is consumed in the form of an infusion, habitually or occasionally in nearly all civilized nations. It has very little nutritive value, but is a stimulant to the nervous system.

It contains an essential oil and an alkaloid (Theine) upon which its stimulating effect depends. Taken in moderation "a spoonful for each person, and one for the pot" in a weak infusion it proves a refreshing and wholesome beverage. A strong infusion has an inhibitory effect upon peptic digestion.

According to Yeo, "adding a little carbonate of soda, ten grains to one ounce of the dry tea leaf, has the effect of entirely removing the retarding effect on digestion."

Black tea according to Church, contains less theine, essential oil and tannin than green tea. Good average black tea contains

Water	8.
Albuminoids	17.5
Theine	3.2
Tannin	17.5
Chlorophyll and resin	4.5
Essential oil	0.4
Minor extractives	8.6
Cellulose, etc.	34.0
Mineral matter	6.3

COFFEE.

Coffee is not used in the raw state. It is first roasted and then made into an infusion or decoction. It is also sometimes prepared by the process of percolation. The choice varieties are Mocha and Java. Coffee contains an alkaloid, caffein, which is identical with the theine of tea, (by some authors the same term is applied to both) and an aromatic oil. This oil is developed by roasting, and, being volatile, it rapidly changes or deteriorates; for this reason, coffee should not be roasted long before it is used, and the grinding should be done immediately before the infusion is made. Coffee is a nervous stimulant and strong decoctions are decidedly inhibitory to stomach digestion, and should never be taken after meals by persons inclined to dyspepsia; but in this like in all matters pertaining to diet, habit must be overcome gradually.

It is however, proper to add that Roberts in his recent work takes the ground that tea and coffee subserve useful purposes to the human economy; and he defends with a great deal of ingenuity his apparently paradoxical proposition that these beverages are consumed in part with the unconscious purpose of retarding digestion. Nevertheless, he says, "Differences of constitution and personal idiosyncracies have to be reckoned with; and there are frequently good, indeed paramount reasons why individuals should in some particular or other, depart from the general dietetic plan."

Coffee is a very common cause of insomnia, and is occasionally used as an antidote in opium poisoning. In the weaker infusion or decoction, especially if taken with cream and sugar, it is as a rule pleasant and agreeable and decidedly nourishing.

The composition of coffee and tea is very much the same, but they differ somewhat in the relative proportions of their constituents. Perhaps the most important constituent of tea and coffee as prepared in the diet table, is the water—*the sterilized* water. All articles of the dietary contain water, but an additional quantity is necessary not only as a carrier of food in the process of digestion and assimilation, but also as a solvent and carrier of waste products which have to be removed from the body. Water forms about two-thirds of the human body. The proportion of water to perfectly dry food, according to best authorities, should be as four to one. Vital action is impossible without water. Most drinking waters contain mineral matter or salts dissolved in them, chiefly carbonate of lime, but also sulphates, chlorides and nitrates of sodium and magnesium. These salts are also found in vegetable and animal food supplies, but the chloride of sodium in solid food is always deficient in quantity and must therefore be purposely added—while if found in any considerable quantity in drinking water it is evidence of sewage contamination.

In the chemical and physiological classification of food, water and the salts or mineral matter constitute the group of incombustible or oxidized compounds. The combustible or oxidizable group include the carbon compounds, such as starch, dextrine, sugar, and fat, and these are termed "heat givers" or "force producers." Gum, mucilage and pectose are of similar chemical composition though probably of less nutritive value.

The nitrogen compounds or albuminoids constitute another group known as "flesh formers." The chief members of this group are albumin, casein and myosin—also gelatine and chondrine from the animal, and gluten and legumin from the vegetable kingdom.

"One of the main functions of mineral nutrients is to aid in the transference, absorption and elaboration of the oxidizable nutrients—somewhat after the same manner that a scaffolding aids the construction of a building. The same or similar offices are performed in plants by the mineral matters they contain." (Church.)

With the foregoing named articles of subsistence and a few others not specifically mentioned, such as macaroni, vermicelli, sago, tapioca, gelatine, etc., the following diet table was adopted a number of years ago.

I.—ORDINARY DIET-TABLE—UNITED STATES MARINE-HOSPITALS.

Sunday.

Breakfast; Chocolate, 1 pint; bread, 6 ounces; butter, ½ ounce; meat-stew, 4 ounces; fruit sauce, 3 ounces.

Dinner: Soup, 1 pint; beef roast, 6 ounces; potatoes, 8 ounces; other vegetables 4 ounces; rice or tapioca pudding, 4 ounces.

Supper: Tea, 1 pint; bread, 6 ounces; butter; ¾ ounce; mush and milk, 12 ounces.

Monday.

Breakfast: Coffee, 1 pint; bread 6 ounces; butter ½ ounce; meat-hash; with vegetables, 6 ounces; stewed fruit, 3 ounces.

Dinner; Vegetable soup, 1 pint; beef boiled, 6 ounces; potatoes, 8 ounces; pudding with sauce, 4 ounces; bread, 4 ounces.

Supper: Tea, 1 pint; bread 6 ounces; butter, ½ ounce; fruit sauce, 3 ounces.

Tuesday.

Breakfast: Coffee, 1 pint; bread, 6 ounces; butter, ½ ounce; corned beef hash, with potatoes, 6 ounces.

Dinner; Beef soup, 1 pint; beef boiled, 6 ounces; fish, fresh 6 ounces; vegetables, 8 ounces; bread, four ounces; fruit 4 ounces.

Supper: Tea, 1 pint; bread, 6 ounces; butter, ½ ounce; *fruit, stewed 4 ounces.

Wednesday.

Breakfast: Coffee, 1 pint; bread, 4 ounces; butter, 2 ounces; fish-hash with vegetables, 6 ounces.

Dinner: Mutton broth, 1 pint; mutton boiled, 6 ounces; potatoes, 8 ounces; rice pudding with sauce, 4 ounces; bread, 4 ounces.

Supper: Tea, 1 pint; bread, 6 ounces; butter, ½ ounce; cooked fruit, 4 ounces.

Thursday.

Breakfast: Coffee, 1 pint; bread, 6 ounces; butter, ¾ ounce; meat-stew, 6 ounces.

Dinner: Soup (boullion), 1 pint; beef roast, 6 ounces; potatoes, 8 ounces; bread, 4 ounces; fruit, 4 ounces.

Supper: Tea, 1 pint; bread, 4 ounces; butter, ½ ounce; fruit pudding, 4 ounces.

Friday.

Breakfast: Coffee. 1 pint; bread, 6 ounces; butter, ½ ounce; fish-hash with vegetables, 6 ounces.

Dinner: Vegetable soup, 1 pint; meat-stew, 8 ounces; fish, 6 ounces; bread, 4 ounces; vegetables, 8 ounces; fruit, 4 ounces.

Supper: Tea, 1 pint; bread, 4 ounces; butter ¾ ounce; cold meat, 4 ounces.

Saturday.

Breakfast: Coffee, 1 pint; bread, 6 ounces; butter, ½ ounce; mutton chop, 6 ounces; fried potatoes, 3 ounces.

Dinner: Barley soup, 1 pint; mutton boiled, 8 ounces; bread four ounces; vegetables, 10 ounces.

Supper: Tea, 1 pint; bread, 4 ounces; butter, ¾ ounce; rice with sauce, or syrup, 4 ounces.

* Fresh fruit may be substituted in season.

NOTE.—The tea and coffee prepared with milk and sugar. The quantities of the articles of diet indicate them as they are prepared ready to serve.

II.—EXTRA DIET.

Breakfast: Mutton chop or beefsteak, 6 ounces; eggs, 2.
Dinner: Chicken or game, 6 ounces; ale or wine.
Supper: Dry or dip toast, 4 ounces.

III.—MILK DIET.

Breakfast: Hominy or corn-meal mush, 14 ounces; milk, 16 ounces.

Dinner: Rice or tapioca (cooked), 12 ounces; milk, 16 ounces: syrup, 1 ounce; bread, 4 ounces; butter, ½ ounce.

Supper: Cracked wheat or oaten-gritz, (when cooked) 14 ounces; toasted bread, 12 ounces: milk, 16 ounces.

In a note accompanying the ordinary diet table it is officially stated that this "table gives the four classes of solid constituents in substantially the following proportions:

Nitrogenous or plastic material, about one hundred and forty grams; fat, about sixty-two grams; carbohydrates, (starch, sugar, etc.,) about four hundred and fifty grams, and salines, about twenty-six grams; and with about two thousand and two hundred and fifty grams of water. Although these quantities are somewhat in excess of the estimates for "healthy adults at rest," they are none too great for convalescents in whom tissue metamorphosis is being carried on, not only in the interest of repair of present waste from use, but in the interest of repair of past waste from disease, a point which should not be overlooked in the construction of hospital dietaries. In making any changes from the above, the substituted article should be in such quantities and of such kinds as to furnish constituents equivalent to those of the articles replaced."

Recognition is made of the fact that climate and season may render modifications necessary.

In my own experience, substitutions are not so frequent as changes in the relative proportions of some of the articles, notably milk and eggs, which are consumed in greater quantity than given in the supply table, while a reduction is not infrequently made in the meat allowance.

But without regard to any change in the articles or quantities of subsistence, it is proper to state that the quality of the various articles of food supplies as given by the analyses quoted in the foregoing description of each, is probably better than that upon which the official analysis of the diet table was originally based. At any rate, careful calculation of the composition of the articles named shows even larger proportions of nutritive constituents than given in the official note.

REPORT OF FOUR HUNDRED CASES OF INTUBATION OF THE LARYNX, WITH PRACTICAL DEDUCTIONS.

Read in the Section of Diseases of Children, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY F. E. WAXHAM, M.D.,
PROFESSOR OF LARYNGOLOGY, RHINOLOGY AND DISEASES OF CHILDREN, COLLEGE OF PHYSICIANS AND SURGEONS OF CHICAGO.

Intubation of the larynx has been so frequently and unfavorably compared with tracheotomy that I feel it my duty to report the cases coming under my observation, and to point out some of the reasons for unfavorable results.

It has been my experience, largely through the courtesy of my confreres, to have now operated on something over four hundred cases, with results that might well make any one an enthusiastic supporter of the operation.

It should be remarked that these operations were performed in private practice in a large city and its suburbs, *without selection*, upon all cases dying from laryngeal obstruction, without reference to age, malignancy of disease or unfavorable surroundings. It must be remarked also that a great many of these cases were experimental cases, and many could have been saved with the more modern instruments and with the judgment and skill coming with larger experience.

RECORD OF CASES.

Age (under)	1	year.	12	cases.	4	recoveries.	33⅓	per	cent.
“	1	“	52	“	12	“	22.07	“	“
“	2	“	70	“	18	“	25.71	“	“
“	3	“	69	“	27	“	39.10	“	“
“	4	“	79	“	30	“	37.97	“	“
“	5	“	39	“	18	“	46.15	“	“
“	6	“	25	“	7	“	28.	“	“
“	7	“	25	“	10	“	40.	“	“
“	8	“	10	“	6	“	60.	“	“
“	9	“	6	“	3	“	50.	“	“
“	10	“	5	“	2	“	40.	“	“
“	11	“	1	“	1	“	100.	“	“
“	12	“	2	“	0	“		“	“
“	13	“	1	“	0	“		“	“
“	14	“	1	“	0	“		“	“
“	43	“	1	“	1	“	100.	“	“
“	20	“	1	“	0	“		“	“
“	60	“	1	“	0	“		“	“
			400	cases	139	recoveries	34.75	per	cent.

It should be observed that of these cases 134 were under the age of 3 years, with recoveries amounting to 25.37 per cent., an age at which tracheotomy is rarely successful. It will be observed that in the first hundred cases there were twenty-seven recoveries, in the second hundred thirty-four, in the third hundred forty, and in the fourth hundred thirty-eight. Improved instruments, improved methods of feeding, greater watchfulness and judgment in the management of cases, and the almost universal administration of the bichloride of mercury after the first hundred cases, undoubtedly accounts for the larger ratio of recoveries.

Why is it that we so frequently hear of unfavorable experiences?

1. On account of the difficulty of the operation.
2. Because judgment is not exercised in the selection of the proper tube.
3. Patients are frequently allowed to die from obstruction below the tube which in many cases can be overcome.
4. On account of the absence of careful nursing and the most watchful attention.

Undoubtedly this operation requires more delicacy of "technique" than almost any other operation in surgery. The operation is a far more difficult one than tracheotomy, and few there are who can properly do it without long and special training. It is an operation for the specialist, the expert and those especially dextrous, if best results are to be obtained. Too frequently operators without special aptitude and with no training whatever attempt the operation, the result is disastrous and after a few trials the operation is denounced. In every city this work should be done by one or two operators, who should spare no effort in becoming skilful, and by doing all these operations would soon acquire sufficient experience to insure splendid results. In country districts or in small towns where the operation is not often required, tracheotomy will be found to be far more satisfactory, as no one can become skilful or maintain confidence in doing the operation on two or three cases a year. The result will depend in no small measure upon the judgment displayed in the selection of the proper tube. To introduce a large and tightly fitting tube that cannot be expelled in case of obstruction below it, and to leave the patient in fancied security, is to cordially invite disaster. A loosely fitting tube should be employed, and no harm is done if it is expelled every day, providing the operator replaces it, as he should, gently, skilfully and with no injury. If a tube is rejected several times a day a somewhat larger one should be used. The attendants should always be instructed that in case of emergency from sudden occlusion of the tube the patient should be inverted, and if by shaking the child in this position the tube is not expelled, the finger should be forcibly placed upon the trachea below the tube, when it can be crowded out.

Many a case can be saved by the removal of a tube on the first indication of membrane below it. The indications of partially detached membrane below the tube are very apparent and should not be heedlessly overlooked. The occurrence of a hoarse squeaking cough, with sometimes a decided flapping sound in the trachea, should call for the immediate removal of the tube. When this is done, the expulsive cough that follows will in a great majority of cases expel the membranous cast causing the obstruction. In this manner I have often secured complete casts of the trachea and even larger bronchial tubes, of which these specimens are but a few examples. By a little persistence it will rarely happen that these casts cannot be secured just as effectively as by a tracheotomy.

The success of the operation does not depend simply upon the ability of introducing a tube into the larynx. The careful nursing and feeding and the faithful continuation of treatment, as well as prompt interference in case of emergency, are most important factors in the successful management of a case.

But little difficulty is usually experienced in feeding the patient in the inclined position. In the absence of a trained nurse the physician himself should personally superintend the matter of feeding, otherwise insufficient nourishment will be given. I have often been able to give a half a pint of milk to a patient without difficulty when parents have declared that it was *impossible* to "get anything down." It is extremely important to continue with the same line of treatment after the operation that was instituted before. Of these measures I believe the most important to be the use of the steam atomizer, the internal administration of iron and bichloride of mercury in frequent full doses, and local disinfection. The most efficient local antiseptics and those giving me the greatest satisfaction have been the bichloride of mercury and peroxide of hydrogen.

To recapitulate: In order to obtain the most satisfactory results, the operation should be performed only by those who by special aptitude and careful training are capable of doing it quickly, gently and skilfully.

The greatest judgment should be exercised in the selection of the tube. Emergencies should be promptly met, the case carefully watched, and every detail of management carefully considered.

240 Wabash Ave.

ACUTE BRONCHITIS IN CHILDREN.

Read in the Section of Diseases of Children, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY C. L. DODGE, M.D.,

OF KINGSTON, N. Y.

Certain anatomical peculiarities of the child's lung deserve attention before entering upon a description of the acute affections to which it is most frequently subject. These peculiarities are of embryonic type, and are present to a greater or less extent up to the fifth year. In the fœtus the bronchial tubes are relatively large, while the alveoli are more bud-like dilatations, "as if Nature had laid out a bronchial tree of generous proportions at the outset, to meet the demands of new-born existence and allow for its subsequent growth." The connective tissue in the fœtal lung is everywhere a delicate meshwork, but loosely retaining the bloodvessels, tending to abundant cell-proliferation, and occupying a far greater relative space than in the adult,—the air vesicles and intervening connective tissue being about equal in extent. The lining membrane of the bronchial tubes, with its rich net work of capillaries, is but loosely bound to the muscular walls, and lies in folds. The alveolar walls are thick, and their structure comparatively loose and yielding; their inner surfaces readily shed and proliferate epithelium, as does the bronchial mucous membrane; moreover, the cells in both instances are relatively larger than those of an adult lung. The blood-vessels, being loosely restrained, readily dilate and encroach upon space properly belonging to the alveoli, and readily cause partial collapse. The thoracic walls are soft and yielding, while the muscles of the throat, bronchi, and chest are relatively less developed and far weaker than in the adult. These peculiarities (which, of course, gradually become less marked after birth as age advances) should be borne in mind, as showing the ease with which serious encroachment upon respiratory space may take place in certain inflammatory conditions.

By the fifth year, in a healthy child, the loose connective tissue has become condensed, properly restraining the capillaries and binding the bronchial lining much more firmly to the walls. New alveoli have been produced, and the proper relative capacity of the air-spaces to the bronchial tubes has been established. The lung has now become anatomically adult, although it still preserves in a measure its faculty of easily shedding epithelium.[1]

Inflammation of the bronchial tubes or bronchitis is one of the most common diseases of early life, and no disease in the nosological list presents greater variations as to type and severity than bronchitis as it occurs in infancy and childhood. It is a matter of common observation for children to pass through the stages of acute bronchitis of mild grade with no medical treatment whatever, and on the other hand we know when abnormally severe it is justly one of the most dreaded diseases of childhood. Bronchitis proper, that is inflammation of the larger tubes, is a more frequent disease than is generally supposed. While I believe with Dr. Morrill that "bronchitis" is credited as a cause of death among children in many cases where the correctness of the diagnosis is open to doubt, I also believe that many cases of bronchitis are diagnosticated, or at least termed inflammation of the lungs. It is well known that bronchitis, among the laity is considered to be a species of throat disease, sub-acute or chronic in character; now to tell many parents holding these views that their child is suffering from bronchitis, when all the symptoms point to a severe acute disease, is to raise suspicion in their minds at once as to the correctness of the diagnosis. Consequently many physicians call every severe case of bronchitis, inflammation of the lungs on general principles. In making out the death certificate many, no doubt, will put down the true cause of death, but when the patient recovers it is from the more serious affection, inflammation of the lungs, the same as it is often with alleged cases of diphtheria; recovery in these cases being a most fortunate result, while in case of death it was no more than was to be expected.

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[1] Dr. F. Gordon Morrill, in Keating's Cyclopædia, to whom I express my thanks for the free use which I have made of his paper.

Etiology.—The cause of acute bronchitis in most instances is sudden change of temperature from warm to cold, exposure to cold and damp or to currents of air, popularly termed a draught, insufficient clothing, wet or damp feet, sitting on the damp ground, etc. This is not the only disease occasioned by the action of cold; diarhœa and cystitis frequently occur when no other cause can be assigned. Climate undoubtedly plays an important rôle in its production, it being most prevalent in countries which are subject to frequent and sudden changes of humidity and temperature. It is said to be rare in the arctic regions in winter, which would seem to prove that extreme or prolonged cold was not a factor. The Eastern and Middle States furnish many cases of this affection, and in New York bronchitis is much more prevalent during the winter and spring than at other seasons of the year. I believe bronchitis to be more frequent among the children of the poorer classes and the affluent, than among the middle classes. This is owing to the fact that the children of the poor are often insufficiently clothed, poorly housed and fed, and generally neglected so far as protection from vicissitudes of the weather are concerned. With the wealthy it is because of too great care on the part of the parents. Over-heated, ill-ventilated houses are responsible for many attacks of bronchitis. Often in addition to the foulness of the air from natural causes there is added the poison of coal gas from a defective furnace. Children brought up under these conditions, carefully housed and over-clad soon become delicate and fragile, veritable hot-house plants, that are sensitive to the slightest change and susceptible to the slightest chill. The exposure of these children for the briefest time to draughts or chilling winds, is sure to be followed by an attack of bronchitis, croup or tonsillitis. The period of first dentition is one during which many children suffer from bronchial troubles. Jacobi believes that the dampness arising from the constant drooling of some babies constitutes an important cause. Measles and whooping cough are usually accompanied by bronchitis, and in these cases the first named diseases are to be considered the cause of the bronchitis. Sex appears to exert no influence.

Pathology.—The late Dr. Flint sums up the pathology in four lines. Although brief, it covers the ground, and I cannot do better than to reproduce it: “Acute ordinary bronchitis is an inflammation affecting a mucous structure, leading to a secretion of mucous and the production of muco-pus in greater or less abundance. Resolution takes place in this situation without the occurrence of ulcerations. It belongs among the symmetrical diseases.”

Symptoms.—I shall first give a description of this disease as it occurs in infants, and then as we observe it in older children. The symptoms of bronchitis differ much in degree, from a slight cough and indisposition hardly noticeable, to the severe attacks denominated capillary bronchitis, from which few recover. In young babies and children under five the disease usually commences with coryza or in common parlance “cold in the head.” This is not invariably the rule, however, for we sometimes notice abrupt seizures similar to attacks of pneumonia or croup. In addition to the usual symptoms of coryza, such as sneezing, defluxion from the nostrils, etc., there is a dry, harsh, paroxysmal cough, sufficient to prevent the child from sleeping in many cases. The respiration is somewhat accelerated and nursing babies are made cross and fretful when attempting to nurse from the inability to breathe readily through the nose. They are obliged to let go of the nipple from time to time to take a breath, and then resume their meal again. The amount of fever in these mild cases is slight; the temperature perhaps will not rise above 99° F. The pulse is more affected, and from the increased frequency of the respiration and the nervousness and excitement consequent upon the disorder, may rise to 120 or 130 in the minute.

In the more severe cases the child is plainly sick. It wants to be rocked, or carried continually; cries and worries at the approach of strangers, and refuses to play or be amused in any way. The fever in these cases is considerable but must not be estimated by the rapidity of the pulse which is usually 160, and often as high as 200 per minute. The temperature, which alone, is to be relied on in these cases as to the severity of the febrile process rarely reaches 103° F. in simple uncomplicated bronchitis. A fair average would be 101° to 102° F. The skin is dry, hot, and burning to the touch, and the cheeks are flushed. The respiration is very rapid. The cough is dry, harsh and persistent, and after a time somewhat painful. The expectoration—which in babies is a misnomer—is scanty and consists of a little viscid mucous which is swallowed the moment it is coughed up. The tightness persists for some days unless appropriate treatment be instituted, and is a source of much annoyance and suffering. Mild attacks terminate in a week, but where at all severe the disease is apt to last longer, that is the principal symptom, which is the cough. In older children we observe some deviations from the description given above. A child of six or eight is able to expectorate and to describe his feelings. There is no expectoration at first, but after a day or two, especially if treatment has been instituted early, the cough loosens and the phlegm is raised with little effort. The child complains at first of tightness and constriction across the chest, with a scraping sensation beneath the sternum on coughing. After the cough has lasted several days, most children who are old enough to talk, will tell us that they have pain in the stomach—the result of traction on the diaphragm, from the persistent coughing. There is also more or less laryngitis present, with pharyngitis of mild grade in many cases. This gives rise to a sense of tickling in the throat which provokes a desire to cough almost constantly where the local irritation is pronounced. Many cases of bronchitis in children of this age begin as laryngitis and extend down by continuity of structure. The fever is not so high with older children, nor is the respiration so rapid. Capillary bronchitis, so-called, will not be considered in this article as I have limited myself to a consideration of acute bronchitis proper, and stated in the beginning that this is intended to apply only to inflammation of the large bronchial tubes.

Diagnosis.—In mild cases of bronchitis the diagnosis is easy. The characteristic cough attended with but little pain; the rapid breathing; the moderate amount of fever, and the slight constitutional disturbance render the case sufficiently plain. But where the attack is severe, and the smaller bronchial tubes—but not the smallest for then we have another disease, broncho-pneumenia—are involved and great constitutional disturbance is present, the diagnosis becomes more difficult and careful physical examination is necessary to enable us to distinguish between bronchitis and certain other diseases with which it is liable to be confounded. These are croupous pneumonia, broncho-pneumonia, pleurisy and laryngitis occurring singly.

From beginning croupous pneumonia, bronchitis may be distinguished by its gradual rather than its sudden onset; its milder febrile symptoms; its absence of vomiting, epigastric pain, convulsions, and delirium, some of which are present in the majority of cases. In uncomplicated bronchitis there is absence of dulness. Croupous pneumonia, as we know, is attended with consolidation of the pulmonary tissue. Bronchitis is a bilateral or symmetrical disease; in this respect it differs from pneumonia. Râles of all kinds are heard in various portions of the lungs during the progress of the disease except the fine crepitant râle, which is pathognomonic of croupous pneumonia. This, however, is not always present, or at least cannot always be detected in young children. The absence of the expiratory moan is also against pneumonia. Finally, in the latter stages of pneumonia, dulness becomes marked, dilatation of the nostrils and bronchial respiration are present and the distinction becomes manifest. From broncho-pneumonia the differential diagnosis is often difficult, and at times impossible. Broncho-pneumonia, however, is not as some suppose, croupous pneumonia complicated with bronchitis, a sort of combination, so to speak, like the equally vague and uncertain term typho-malarial fever. Broncho-pneumonia is a disease which involves the connective tissue, bronchioles, and air cells. It is very common among children under five years of age, and its mortality is large. It is believed by some of the best observers that a majority of deaths credited to bronchitis are really due to broncho-pneumonia. With this opinion I concur. Now, how can we discriminate between acute bronchitis of severe type and broncho-pneumonia? As stated above, this is not always possible, but attention to the following points of dissimilarity will materially assist us to do so. First, high temperature 102.5° to 103° F., with considerable dyspnœa points strongly to broncho-pneumonia, as does also a marked degree of prostration. Severe constitutional symptoms are rarely present in uncomplicated bronchitis, and when found are of short duration. Ziemssen says that elevation of temperature always takes place if catarrhal pneumonia supervene upon catarrhal bronchitis; in the latter disease it seldom reaches 102.5° F., while in catarrhal pneumonia it often mounts to 105° F. in a few hours. At the same time the pulse becomes more frequent, the face redder, and the child evinces great terror and restlessness, or in severe cases, soon falls into a state of apathy and somnolence.

The physical signs are not always trustworthy. "Theoretically speaking, broncho-pneumonia may be distinguished from bronchitis by the dulness on percussion; practically this aids but little. Dulness on percussion is in children difficult to elicit; and again, a dulness may be temporarily produced in capillary bronchitis by collapse of the pulmonary tissue. There are therefore, no absolute signs of difference," (Da Costa).

A word as to capillary bronchitis. Modern writers, particularly those who study the pathology of this disease carefully and have access to the post-mortem records, are gradually abandoning the term capillary bronchitis, and substituting broncho-pneumonia, as the correct and appropriate designation for this condition. It is to be hoped that writers will soon cease to employ this term as it is misleading and confusing in the extreme. From pleurisy, bronchitis is distinguished by the superficial respiration, the stitch-like pain in the side on coughing and the expiratory moan. Later, physical signs present themselves which are unmistakable. Furthermore, acute pleurisy is not a common disease in children. In laryngitis there is always hoarseness, very little fever and but slight constitutional disturbance, except in the spasmodic form or false croup. Here the peculiar "croupy" cough is pathognomonic. Once heard it is never forgotten. There is also absence of râles.

Prognosis.—In uncomplicated cases of acute bronchitis where the inflammation is limited to the large tubes the prognosis is favorable. Since most cases of broncho-pneumonia, however, begin as simple bronchitis, the bronchioles and alveoli becoming involved later, it is well to give a somewhat guarded prognosis in all cases where the sanitary surroundings are not first-class or where proper care and nursing are unattainable. As stated above it is extremely probable that in very many cases bronchitis is credited as a cause of death among children when the true cause was broncho-pneumonia, often incorrectly termed capillary bronchitis.

Treatment.—While bronchitis cannot be cured by medicine in the sense that malarial fever is cured by quinine, yet I know of but few diseases in which appropriate treatment is followed more quickly by relief from distress and suffering. In mild attacks very little medicine is ncessary but it is quite important that this little be selected with care. Expectorants are remedies that stimulate secretion from the bronchial or laryngeal mucous membrane; in plain English, that loosen or cut the phlegm so that it can be "raised" and expectorated. Great confusion appears to exist in the minds of most young practitioners with regard to this important class of remedies. Among no class of disorders do we see more diversified treatment than in bronchitis, acute and chronic. No better evidence of a man's knowledge of therapeutics can be given, than his ability to prescribe correctly for a cough, be the cause whatever it may. Cough mixtures are frequently constructed on the shotgun principle of hitting something. "Stimulating expectorant" is an unfortunate term. To the beginner, the man without experience, it conveys a false meaning. To stimulate expectoration in the treatment of cough, is the great desideratum in the opinion of the masses, both in the profession and among the laity. But do the so-called stimulating expectorants really increase the secretion from mucous membrane lining the air passages?

Surely squill, senega, ammonia, etc., do not in the early stages; they are simply worse than useless here. Ipecac, tartar emetic and opium, are the remdies in the first stage where the bronchial mucous membrane is swollen, congested and dry, and secretion is arrested or more correctly, is deficient. Nevertheless, a large proportion of the cough mixtures dispensed for a tight cough will be found to contain squill.[2] The opinion has been held from time immemorial that a tight cough forbids the use of opium. No greater error was ever promulgated. To my mind the following quotation from the late Austin Flint is replete with wisdom: no truer words were ever spoken; and the amount of suffering that has been averted by this teaching is simply incalculable. He writes as follows[3]: "Opium is thought by many to be contraindicated in the first stage (bronchitis). It is supposed to interfere with the free secretion of mucous and render expectoration difficult. This is an inference from the effect of opium on the secretions in health; but, so far from these results being produced, opium appears to hasten the second stage. The free secretion of mucous is not the *cause* but the *consequence* of an abatement of the inflammation; and by contributing to the latter, opium virtually acts as an expectorant. Opium, therefore, is indicated in the first stage of bronchitis, as it is in most acute inflammations." This reasoning applies to children equally as well as to adults. Antimony should never be prescribed for very young children as an expectorant, for the same reasons that prohibit its employment as an emetic. The so-called stimulating expectorants as squill, senega, and carbonate of ammonia are inadmissible until free secretion has been established; they are useful in those cases where the circulation is feeble and the patient weak, and where the cough—for there is no voluntary effort on the part of a little child—seems inadequate to the removal of the bronchial secretions. In all severe cases the child should be kept in bed. The temperature of the room should be kept uniform at about 70° F. The child's chest should be well rubbed with a mixture of equal parts of camphorated oil and oil of turpentine as hot as can be comfortably borne. Immediately afterward the chest should be covered with cotton-wadding to which a piece of oil-silk has previously been loosely stitched, this to be retained in position by a muslin band or binder. It should be left on and not disturbed until the child has recovered from all acute symptoms. This is far preferable to the wet and nasty poultices that we were formerly taught to use as a routine practice. In most cases a cathartic is indicated and the old mixture of castor oil and molasses which has been used thousands of times has no superior. Many mothers, however, decline to employ it, and in these cases we must resort to something else. Calomel in $\frac{1}{10}$ grain doses in the form of tablet triturates administered every hour till the bowels act, is a pleasant and effective purgative. It may be supplemented by a dose of citrate of magnesia or compound liquorice powder, in older children. For the cough which is the most distressing symptom, there is nothing to be compared to paregoric in doses proportionate to the age. The following formula has served me well:

℞. Fl. ext. ipecac gtts iv.
Paregoric ʒj–jj.
Syr. tolut ad. ℥jj. M. S.

Take one teaspoonful every two hours till cough becomes looser or less frequent.

This in many cases with the purgative, will be all the medicine required. If, after the use of this prescription for twelve or twenty-four hours the cough does not loosen and become softer, the amount of ipecac should be increased. One-half drop of the fluid extract is not too much to give a baby with a very tight cough and a dry, non-perspirable skin. It need not be kept up however, in such large doses. I do not believe that it is necessary to keep a child "constantly on the verge of emesis" to prevent an ordinary bronchitis from becoming "capillary." It is much better practice to reduce the quantity of ipecac as soon as expectoration becomes easy, which, in the child means only the ability to "raise" easily and without effort. From this time forward a mixture like the one above with the ipecac entirely omitted will be of more service in the majority of cases than any complex formula containig ammonia with one or more of the so-called stimulating expectorants. In those severe cases where the cough is suppressed or in danger of becoming so, then opium is risky for the time being, and we must resort to those remedies that tend to stimulate cough and the respiratory centre, such as ammonia, senega, strychnine or nux vomica, digitalis and liberal doses of alcohol in the form of French brandy or good whisky. Except in these cases they are rarely needed in acute bronchitis. As to emetics, I rarely prescribe them for this disease except under the following conditions. First, in a robust child when seen early with a full, rapid pulse, and a dry, hot skin; here the constitutional effect of the emetic is often markedly beneficial. The nausea induces relaxation and the depressing effect on the circulation relieves the febrile symptoms. The other indication for their employment is where the child's strength seems inadequate to raise or expectorate an accumulation of mucus which threatens suffocation; but even in these cases the emetic should not be repeated too frequently as the depression which follows is ill-borne.

THE RELATION OF DRUGGIST AND PHYSICIAN.

Read at the June meeting of the Ramsey County Medical Society, St. Paul, 1892.

BY CHARLES L. GREENE, M.D.,

LECTURER UPON SURGICAL ANATOMY IN THE UNIVERSITY OF MINNESOTA.

Gentlemen: This nineteenth century is pre-eminently a period of advance in thought and practice. Even theology has been forced to abandon many of her strongholds and adapt herself to changed conditions. Science has exposed many fallacies and unfolded a multitude of new truths. Medicine has upheld her standard well in the front ranks and shown men how to prevent and disperse diseases once deemed a necessary and inevitable penance for the race. In short all departments of learning have conformed to the requirements of the active, inquiring, analytic nineteenth century brain. Whither this spirit of intelligence will ultimately lead us we cannot know, but in medicine, at least, we will set no limits or boundaries to the onward march of its intelligence and the intellectual and moral light which is to illuminate for us all the dark nooks of our chosen and beloved profession. Looking back upon the work of our early predecessors with a feeling of deep wonder, not unmixed with repugnance, we cannot fail to be moved to admiration for the rough and sturdy nature, the patient and profound research which enabled them while groping in comparative darkness to build a broad and substantial foundation for that great superstructure, whose upper limits we cannot now begin to measure. We feel that we labor in a brighter light but yet we find here and there areas of darkness which the sun of our united intelligence has not yet dissipated. We find in our present habits and practice many halting discrepancies which can hardly be reconciled with our steady advance in other directions.

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[2] From personal knowledge acquired in my early days as a retail pharmacist, I can vouch for the correctness of this assertion. A favorite formula for coughs and colds of all stages with one of the leading physicians of a western city was syrup of ipecac, syrup of squills, and paregoric, each one ounce.

[3] Practice of Medicine, p. 210.

It is to one of these discrepancies that I wish to direct your attention in this paper without desire to pose as a critic and without claim to originality. Simply desiring to place before you facts which appear to me vital and to point out what appears like a parodoxical relation between our physicians and the pharmacists of the present day. In few departments of medicine have our advances during the past century been more marked than in the direction of the preparation and therapeutic application of drugs. Jalap, calomel, blue mass and similar old remedies are fast being relegated to the upper shelves, and newer, more definite and more elegant preparations are superceding the powders, syrups, infusions and decoctions of former days. The organic chemist is giving us yearly new and valuable products the physiological action of which we may often predicate from the grouping of their elements. Physiological chemistry is adding link by link to that grand chain which we hope is to show us eventually the marvellous sequence of changes undergone by body tissues in the various functional activities of the organism as well as the true and ultimate effect of agents administered by us with the view of modifying tissue life and activity. Hand in hand with these investigators works the scientific therapeutist in his endeavor to formulate definite laws for therapeutic application of drugs based upon the researches of his colaborors in the chemical and physiological laboratories. All of these branches of our science are young giants, as yet in their swaddling clothes but already giving abundant promise of a robust and virile manhood. Our professional environment then is continually changing, let us inquire whether we are adapting ourselves to our changed conditions as by right we should. I believe that in many respects we are not. The bonds and fetters of custom and tradition are the most difficult of all to loose. They bind and restrain young and old alike from full freedom of thought and action. Within a few years we have had added to our weapons of offense and defense in our warfare against disease, new drugs potent in action, definite in results, and we have seen evolved from the cruder and more complex drug the infinitely subtle, pure and straight-forward alkaloid. With these have come new methods of preparation which enable us to administer our drugs with greater precision and quickness and with the least hardship to our patients.

In former days the physician could only carry his own drugs from house to house by employing a receptacle of the size of the modern saratoga, and must either dispense by guess or spend a large amount of his time weighing, dividing and directing. Now, however, he may carry all ordinary drugs for emergency or common ailments, in a small and compact case and dispense them as quickly as he could write a prescription, and with almost absolute precision and safety. He will often save life where it was formerly lost by delay, and always save time and money for his clients.

So with his office prescriptions. He was formerly obliged to have either a large drug stock and employ skilled help or waste much time in attempting to combine in himself the functions of physician and pharmacist. He was in danger of either poisoning his patient by overdosing or of being chagrined by utter lack of action in some ancient or improperly prepared product. To him then the druggist came as a true friend and helper. He saved his time and his patience, was a friend in council, and a fountain of authority in the various mysterious branches of pharmacy.

Truly then the druggist should be, and once was, the doctor's aid and faithful ally. He is the representative by descent of men who stood for advance and scientific endeavor. He it was who in past times made a study of so compounding and dispensing as to give the doctor and his patient the best results with the materials at hand. He carried uncomplainingly the immense stock of roots and herbs, metals base and fine, syrups, syringes and all that might satisfy the finical and fancied, or the real and urgent needs of the physician and his patient. Much of his stock was dead and much also of necessity decomposed and inert. Yet upon him the physician relied for a fresh and pure drug. He served as a valuable check for hastily written prescriptions and in many other ways comforted, aided and abetted the long suffering and hard worked medicus. But on his part the doctor returned often the evil for the good, for, not content with prescribing capriciously, he prescribed in characters which would be as Hebrew, Arabic or Chinese to the ordinary reader. He wanted syringes of a certain curve, drugs of an infinite variety and in many ways added his mite to the burdens of the suffering pharmacist. Perhaps it is that the trodden worm will ever turn, perhaps it is the simple logic of events, but the druggist has gradually been getting even with his tormentor. For of late years a surprising change has occurred in the mutual relations of the two men. The druggist is forced to keep in stock a multitude of almost worthless preparations. This means an accumulation of dead stock and that means large prices for drugs dispensed. The charge for a prescription bears almost no relation to the ingredients composing it. It is a charge which has for a basis what the traffic will bear and not the true basis of cost of ingredients. The rise of the great manufacturing houses has taken much of the scientific investigating spirit from the pharmacist and has nearly reduced him to a purely commercial basis. At the same time, strange to say, the educational qualifications required by statutory law are being constantly increased. The sale of patent medicines has been a great source of profit to the pharmacist and injury to the physician and has doubtless had much to do with the increase in druggist's establishments which has reached a point where it threatens ruin to many through excessive competition and helps to turn the pharmacist to desperate means for stemming the rising tide which threatens to overwhelm him. We see our apothecary stores, not dispensing pharmacies but salesrooms for a miscellaneous stock of perfumes, jacknives, toilet articles and such matters as would seem to be but distantly related to the art and science of medicine, and coincidently and of necessity we see large and showy stores and a corps of assistants who seem to be occupied much more with the purely commercial than with the scientific aspect of the traffic. We can but feel that there is actual danger in the blending of these interests. That the man who is subdividing powerful and poisonous drugs should not be subject to interruption to sell a toothbrush or glass of soda water to an urgent customer. Again arises the matter of dead stock. Why do we continue prescribing in powder form where the triturate gives us the same drug already prepared, equal in solubility and exact in dose? Why do we make the druggist a slave to our fancy for prescribing Brown, Jones or Robinsons' open formulæ, or closed formulæ, preparations which are no better than his own but oblige him to buy a large package only a fractional part of which is to be used? We may prescribe hypophosphites and pepsins of different make for each day in the year, and our patient and the druggist will suffer for our poor judgment. It all leads to accumulation of dead stock and that leads to high prices and unreliable products. How often does the doctor prescribe a drug, as cascara sagrada, in proper dose without effect, and upon another occasion get an exhaustive and exhausting action from the same in larger dose bought of another pharmacist. The patient is promised a gentle laxative effect, in both cases he is disappointed and blames his doctor. The doctor knows full well that he has had an inert or bastard product in the first instance and that in the latter a new or reliable preparation was obtained. Then how the fortunate possessor of a successful remedy rejoices in the possession of his prescription. That solitary dollar of his purchases medicine for his immediate and remote family connections and their friends, and ever and anon the simple formula returns to the well to be refilled. To blame the druggist for this at the present time would be unfair because the court of law decides it legal, yet the custom of past years was probably the basis for such a decision. Some things, however, are indefensible; counter prescribing is one of them. Our present laws are utterly insufficient to check this abuse. We should have such a law as would make it easy to convict and imprison all men perpetrating this wrong against the community.

There is a striking incongruity in making a high and rigid legal standard of requirement for the practice of medicine in this State, while at the same time men criminally ignorant of medical science are able to dispense over their counters the most powerful of our drugs for the relief of symptoms which they must necessarily be unable to interpret. Again, there is the manufacture and sale of cure-alls over the counter—cure-alls in some instances based upon the prescriptions of the very men whose patronage the druggist is soliciting.

As regards the sale of patent medicine no comment is necessary. The business is dishonorable to a scientific man if not to all who indulge in it. Most of the articles dispensed are fraudulent, and by false promises and alluring hopes doubtless produce delay and aggravation of symptoms which kill yearly a small army of credulous unfortunates. Of the evil of substitution little need be said for no pharmacist holding himself reputable will permit it. With the second-class druggist we know it as a common, damaging and dangerous practice. Here then we find that, largely in self-defense and through unreasonable competition, the druggist is forced into a position of actual antagonism to the doctor. Both desire certain things which if attained would put us on a common sense footing and redound to the benefit of both alike. The physician desires accurate, rapid, low-priced dispensing. He believes that counter prescribing and patent medicine sales are directly injurious to his patients and to his own business and professional interests, yet he makes little effort to avail himself of modern preparations or aid the druggist who attempts to abolish the two latter evils. The druggist wants for himself the minimum expense for maintenance, viz.: rental, labor and the smallest possible dead stock. There are few medical men who use in regular practice over a score or two of drugs for ordinary everyday prescribing. Yet look at the shelves of our drug stores and you see them piled with hundreds of remedies which are often obsolete, useless and practically worthless, but must be kept to supply occasional demands. There is a large body of manufacturers who are placing their products upon the market daily and advertising them by bringing their articles directly to the physician. A memorandum book, paper cutter or other more or less expensive souvenir reminds the physician that he should prescribe the pills or elixirs of their firms and by no means those of any other. As before stated a man may prescribe hypophosphites or pepsins for every month or day in the year; yet it is fair to presume that any one of those made by our own reliable pharmacists would do all that they might do. Daily we prescribe our calomel and soda in powder to be triturated and divided. The druggist pounds and stirs and measures and weighs. Our patient must submit to a considerable delay and pay an additional sum for the simple prescription. Yet the time and labor of the druggist and the time and patience of our patient might have been saved had the tablet-triturate been prescribed. In the tablet-triturate I firmly believe that we find a partial means of solution of our vexatious and troublesome problem. Here is a means for the physician to secure a cheap, portable, uniformly strong, attractive and accurate form of the drug he desires to use. So also the pharmacist has a form of the drug which would cost him less than two cents a prescription, would require the minimum of space for its display, and would do away with three-fourths of his clerical force. The true druggists have been forced into their present false position, and I believe they would be glad to conform to any reasonable requests from physicians, but as prescriptions are at present written, there is too great an outlay requisite to admit of a sufficient profit from the dispensing trade alone at a reasonable price. There are doubtless too many druggists at the present time and too great competition for the needs of the community. Many of them must inevitably go out of business. We all appreciate the strict business honor and sterling integrity of our best pharmacists. We all have warm friends amongst them. We all desire that a happy solution of our difficulties may arise, but this is the business end of our profession, the point where the interest of the doctor and his patient are both involved, and in business each man must consult his best interest in all honesty. The present system, inasmuch as it forces the druggist into a position of actual antagonism to the doctor, is a false and artificial one. He is our natural friend and ally and we would most heartily welcome a restoration of the old relations, but while we on the one hand, by prescribing our remedies in the present manner, compel large purchases of dead stock, force him to employ a large amount of skilled labor and to rent expensive and spacious stores, so we must expect to see our own interests damaged by the counter prescribing, patent medicine sales and enormous charges for our own prescribed remedies. The day of change is at hand. The younger men particularly are coming to a full realization of the fact that nothing but custom and habit could maintain the present paradoxical relation between physician and pharmacist. It is a significant fact that in the great city of Brooklyn, two-thirds of the physicians are said to be dispensing their own remedies. The time has certainly come when we should throw aside our prejudices and ask ourselves whether we have any moral right or are under any obligation to keep up a system which is expensive for our patients and disastrous to our own business interests, when the means of change are at hand. We shall always need and welcome the true pharmacist, but we should work upon fairer and more reasonable lines. There are men who have endeavored to cut off counter prescribing, but they say that they received little or no encouragement at the hands of the profession. Unless some change is effected the physician will become gradually his own dispenser. For at a cost of a few cents and in as little time as would be occupied in writing a prescription he can give his patient a tangible substance for his money, a palatable and trustworthy remedy, and save him money, time and possible danger, while resting himself secure in the belief, warranted by the guarantee of a great and scientific manufacturer, that he has given his patient a pure and active remedy in exact dose. Almost all the common drugs are now put into the form of tablet-triturates and the physician may even have his own peculiar formulæ so prepared. He has then nearly all the requisites of the ideal preparation, viz.: cheapness, ready solubility, elegant appearance, exact dosage, purity, freshness, uniformity, and last but not least, portability. The cost is nominal. He can prescribe at house or office for all ordinary ailments without recourse to outside sources. I repeat that the druggist and physician must achieve a proper basis for mutual support now or never. No one can deny the right of any man to dispense his own drugs if he chooses. No one will deny, I trust, the advantage which would thereby accrue to the profession and their clients by so doing, unless some radical change is made. Let us try to look at the question frankly and without bias, as we look at others in this great era of progressive thought, and then in some happy way will be found a means rational and sensible of placing druggist and physician in proper relationship while giving to patients the protection and full benefit which they merit at their physician's hands. No doctor wants to do all his dispensing; there will in any event remain sufficient always for the pharmacist in certain lines, but if there were no other way of bringing about the relief of our patients in this matter we ought certainly to dispense for ourselves. I am positive, gentlemen, that these are the views of many here present to-night. Why should such ideas not find free expression? We are under the strongest obligation to advance and protect the interests of our patients, and in doing so, we are true to our profession and ourselves. To allow other motives to influence us, to allow other considerations to tie our tongues, is to prove ourselves recreant knights and unworthy to bear aloft the great and victorious standard which has in the past led the fearless warriors of our profession to their countless victories.

CONTROL OF QUARANTINE BY THE NATIONAL GOVERNMENT.

Read before the Berks County Medical Society, Reading, Pa., Nov. 8, 1892.

BY DANIEL B. D. BEAVER, M.D.,

The appearance of the cholera in New York harbor lately and the measures which were taken to prevent its entry have given rise to discussions of the question as to whether quarantine should be under the control of the National Government.

The question has been argued in the periodicals from legal and sanitary points of view.

In the latter phase it interests us alike as citizens and as physicians. Being physicians we should be sanitarians, and being sanitarians we should not only be interested in a question of such vast importance to the whole country, but feel it our privilege and duty to speak upon it.

With this view I beg to present it to the consideration of this Society, but in doing so will invite attention to such points only as have not been brought out in the discussions which I have seen in the journals.

It has been admitted generally that the health officers of the port of New York succeeded admirably in keeping the cholera out of the country, with the means at their command, but it is also well known that the State of New York and the National Government were not prepared to do the work to the best advantage of all persons concerned. The people who unfortunately came into port with the disease on board were detained unnecessarily and exposed to cruel mental and bodily suffering, while others who also came from infected ports but did not develop the disease on the way were permitted to land immediately after the most superficial and useless examination.

Having been in quarantine two days on a vessel which arrived in New York on the 22d of September, after having been at sea twenty days in consequence of a break in the machinery, with a perfectly clean health bill, excepting one case of typhoid fever, I can speak from experience of the unnecessary delays to which passengers under these conditions were exposed by the hurried and careless examination of the officers. Our vessel arrived at the Quarantine Station at 3:30 P.M., and was boarded by the port physician two hours later. The next morning a young man appeared and passed in review all the first cabin passengers, asking each one the whereabouts of himself and luggage ten days before sailing. I replied that I was on the English Channel on the tenth day, but arrived at Rotterdam the next, and after having been there two days went to England directly by boat, on account of the cholera news from adjacent cities, having, however, left there the day before the vessel which brought the disease to that city got in.

No attention was paid to these explanations, and my name was marked "Rotterdam" on the list. The next morning there came on board a man with orders to fumigate all my luggage, and two other hand bags, one of which belonged to Mr. L. G. Young, of Savannah, and the other to Rev. J. H. B. Brooks, of Oil City. Mr. Young and his wife had been in London some time, but during the ten days before they sailed he went to France for a few days on a business errand, taking along the bag with such articles of wearing apparel as he might need there. He returned to England, met his wife, and they, together with the bag and other luggage, travelled to Glasgow and embarked with 440 other persons, and yet of all their goods only the bag was fumigated. Mr. Brooks had also been in France during the ten days' limit, with his grip sack, and the sack had to undergo purification, while the clothing which he wore was not suspected of containing any of the deadly microbes. My luggage consisted of a trunk and a small satchel. During the voyage of twenty days the trunk laid with half a dozen others in a recess outside of my cabin, and was opened almost daily, often when some of those near it were also open. The satchel was kept in the cabin and things put in and taken out of it several times daily, frequently in the presence of my room mates.

Now, a person who comes from a cholera infected district either does or does not bring with him the germs of the disease. If they are with him he should certainly be disinfected thoroughly in quarantine, and if not, he should as surely escape detention and annoyance. My baggage was as free from infection as if it had come from Greenland, and if it had not been so, there was every opportunity for the microbes to get into any of the parcels around it, with which it was opened and shaken up during the twenty days. What advantage was there then in fumigating mine while all that around it was allowed to pass unnoticed!

The fault in the official inspection was in the lack of thoroughness in the first examination. This was made with too much carelessness and dispatch to avoid error.

Some passengers who had been on the continent during the ten days' limit denied it, and the examiner made no effort to detect the untruthfulness of their statements. If they thought denial requisite is it not probable that they came from infected places, and that their luggage should have received more attention than that which belonged to those who frankly admitted having been on the Continent? Such deception could have been discovered by taking more time, and requiring of each one his hotel bills or other written evidence of location during the ten days.

Then, the fumigation itself was as ineffectual as the preceding proceedures. The trunk and bags were simply laid open in the second cabin lavatory, and exposed to sulphur fumes for one hour, without removal of any of their contents. That such fumigation had a destructive effect upon the cholera microbe, if it was there, will hardly be admitted by any one who knows anything about the subject. Moreover, it has not yet been determined that sulphur fumes will kill the microbe under any circumstances. Surgeon General Wyman says, "sulphur disinfection is inadequate, and it is necessary to rely on the use of pure steam, unmixed with air, at 100 C. (212 Fahr.) for clothing and baggage, to destroy the vitality of the comma bacillus of cholera."* At least, it is safe to say that it has not yet been determined that the microbes of this disease can be killed with less exposure to sulphurous acid fumes than will also disintegrate the animal and vegetable fibre of which wearing apparel is made. Then, in the present state of our knowledge, fumigation without destruction must be regarded as futile, and the discomfort and detention incident to it is an inexcusable injustice to travellers; and fumigation with unnecessary destruction of personal property for the public weal, without ample reimbursement of the individual, should under no exigency be tolerated. Errors in both directions can be avoided by searching preliminary examination of passengers.

It may be said in extension of the severities and inefficiencies of the methods employed in New York harbor that the officials were overworked, and had not time to go into examination of details sufficiently to avoid error, and conseqent injustice to persons, and that the crowded state of the vessels augmented very much the trials in quarantine. But, as vessels are always crowded most when the danger of importing an infectious disease is greatest, and the suffering incident to detentions is always greatest when vessels are crowded, such admission does in no way palliate the faults of a system of quarantine which does not or cannot provide properly for emergencies.

That the system in New York is sadly wanting in efficiency, entailing cruel suffering on some and letting others escape without proper examination is shown on one side by the heartrending tales told by the passengers on the Moravia and the Normannia, and on the other by those on the Ethiopia and other uninfected vessels.

On the other hand it is also true that the sufferings of the uninfected passengers on the infected ships were due primarily to the fact that they were permitted unknowingly to embark with those who brought the disease on board. There the danger to health and life began, and there the first quarantine investigations should have been made. That could probably not have been done by the State of New York because it has no representatives in foreign countries, but the United States government with a consul in every European port, might have extended its protective arm across the water. Possibly there are legal and constitutional objections to such an extension of the functions of the Federal Government, but in a common sense view of the matter they do not appear.

The Federal Government protects citizens of all the States alike in person and property against violence while sojourning in foreign lands. It will exert its whole power to liberate a citizen who has been falsely imprisoned. Why, then, should it not do the same to protect him against danger to health and life from contagious diseases which come to him him through the neglect of others! Why should it not prevent him going on board a homeward vessel in a foreign port in company with infected passengers and merchandise, blindly and without any means of ascertaining the peril he is meeting!

The mortality on the steamship Moravia on its voyage of twelve days equalled that of the great military battles of the age, and the mental and physical suffering associated with the imprisonment of the survivors at sea is equalled in modern history only by the horrors of Andersonville and the Black Hole in Calcutta, and yet nothing was done to prevent American citizens from walking headlong into the death trap.

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* The North American Review, October, 1892.

On the morning of the day the Ethiopia sailed from Glasgow, I called upon our consul there to learn what provisions had been made against the embarkation of steerage passengers and others from districts affected by the cholera. I was received very courteously and told that he had just then received orders from Washington to request the steamship company to fumigate all the steerage passengers under his supervision. Thinking that possibly further protective orders might have been received from home I repaired to the dock four hours ahead of the sailing time of the vessel, expecting to undergo some sort of examination, perhaps fumigation, but found nothing of the kind. It was said that the steerage passengers were fumigated, but I did not learn where. They, with the second cabin passengers passed in view of a physician as they stepped from the gang plank who did nothing more than look at the motley crowd as it passed him, and ask a few children when they had been sick. He could no more tell whether the seeds of cholera, scarlet fever or diphtheria were in their bags and bundles than whether they had had mutton for dinner.

After such meagre sanitary precautions 442 people were sandwiched into the vessel, only two weeks after the cholera had broken out in the city among a batch of Hebrews who had arrived a few days before the departure of the steamer on which their passage had been engaged. The Ethiopia sailed on the day the President's proclamation, imposing a twenty days' detention in quarantine on vessels with steerage passengers on board, went into effect, with 191 persons in the steerage, and the prospect of being detained twenty days was a constant source of anxiety and fear during the voyage. Would it not have been better if the President had proclaimed that the twenty days' purification must be performed on the other side; that a rigid examination of all persons embarking for this country, requiring written evidence of their whereabouts for twenty days, must be made by the consul; and all persons coming from sections afflicted with the cholera must be disinfected and detained twenty days before sailing, upon pain of indefinite detention in quarantine here.

A thorough preliminary examination and detention, if necessary, on the other side would simply change the place of action; and the change would be advantageous. It would enable all persons to procure evidence of where they were at any time previous to departure, and in case delay were necessary would permit them to remain on land, free from the enervating restraints and nauseating discomfort which are inseparable from confinement on a crowded vessel lying at anchor.

At home the pauper and criminal are shielded against contagious and infectious diseases, while under our present system of quarantine the best citizen abroad with his face turned homeward, perhaps in sight of the Stars and Stripes, is compelled to step upon the broad ocean without the least assurance that pestilence and death are not awaiting him in the foreign filth with which he will be surrounded on the way, and from which he cannot escape, to find the door closed against him for twenty days if he survive to reach home.

In opposition to national control of quarantine, and in advocacy of State rights, it may be said that the traveller abroad can ascertain from the owners of the vessel he proposes to take whether persons from parts where cholera prevails will be on board, and if they deceive him and he suffer loss through the deception he may have recourse at law at home. So he may if he be fortunate enough to get home alive.

But this is the logic of the forum and the courtroom, and not of the hospital and sick room.

As physicians and sanitarians our best work is done in the prevention of illness and suffering; and at present in view of the strong probability of the recurrence of cholera in Europe next summer, it seems the immediate duty of the profession to call the attention of our government to the importance of making provision to meet the dread disease before it reaches our shores, to guard our own citizens in transit on the sea against it, and thus prevent a repetition of this year's mournful scenes in New York harbor.

These ends can be reached best by putting quarantine entirely in the control of the National Government, and extending its regulations to, and enforcing them rigidly, in foreign ports.

HIGHER MEDICAL EDUCATION.

BY W. M. HARSHA, A.B., M.D.,
OF CHICAGO, ILL.

Higher medical education was discussed at the meeting of the South Side Medical Club, October 28, last.

President Harper, of the Chicago University, had expected to be present but was prevented, much to the disappointment of the members of the club.

The principal speaker of the evening was Prof. Wm. E. Quine, a recognized leader in the movement toward higher medical education, who in his usual interesting and impressive manner, traced the advances made in medical teaching during the past two decades. He showed conclusively that the progress has come through the efforts of medical teachers of the more progressive schools, rather than through the demands of the profession at large, or of the public or even of State boards of health. The higher standard of preliminary education now obtaining among medical students was noted among the encouraging signs; and the establishment of an increased number of chairs, and of microscopical, bacteriological and other laboratories here in Chicago, in the more progressive medical colleges, was cited to prove that higher medical education has already been inaugurated; and that we have now in our midst facilities for the scientific study of medicine equal to any found on this continent.

In the discussion that was evoked comparisons were made between the present methods of teaching in this country and those of European countries, which were not discreditable to us when only the better colleges are considered. The average attainment of practitioners however was deplored; and the short and easy courses of study through which a majority have graduated, were pronounced inadequate.

The opinion was general that a higher preliminary education and compulsory four year courses of medical study in which laboratory, manual training, and clinical instruction shall be prominent features, are necessary. Many of these conditions now obtain in the better institutions, while in others there are efforts to raise the standard. This augurs well for the medical graduates of the future and much credit is due to the enthusiastic supporters of the movement. Little was said about post graduate study. A majority of all practitioners of the present have obtained their degrees before the advances noted were made. These men are the conservators of the public health, and to some extent, of the wealth of people.

As such it is their duty to disseminate sanitary and hygienic knowledge and so prevent disease, although in doing so they strike at the source of their income. So often did epidemics occur in times past to decimate populations that some philosophers regarded them as a beneficent provision of nature intended to check over-population. But scientific physicians have sought out the causes of disease in many instances and rational means of prevention were next discovered. Within the past few years the specific causes of suppuration, which gives rise to most forms of blood poisoning, have been discovered. This led to modern aseptic and antiseptic plans of treatment, and as a result the mortality from wounds, injuries and surgical operations has been reduced to a minimum. Likewise the various causes of tuberculosis, typhoid fever, tetanus, erysipelas, diphtheria, and other infectious diseases have been revealed by the microscope, and we have new grounds for belief that means of prevention and cure will be found.

It is estimated that nearly one-third of all children born die before they reach the age of five years—mostly from microbic diseases.

Tuberculosis causes about one-seventh of all deaths. Typhoid fever has caused two thousand deaths annually during the past two years in Chicago alone. From this it will be seen that much remains to be done. The prevailing spirit of scientific investigation must be fostered. It is the duty of the profession to conserve life and assist in the evolution of the race and the attainment of its destiny.

The public which reaps the benefits of scientific medical discoveries has done little in return. The National Government has not consented to establish a department of public health. Appropriations have been insignificant; and legislation aimed at higher standards has been uniformly obstructed in the various States.

In other departments of learning National, State and individual aid of a substantial character has been freely given. In our own State, except in one instance, nothing has been bestowed upon medical teaching so far as I know. Millions have gone to endow hospitals in which the sick may be cared for —little has been given to foster the study which shall aid men to prevent and cure disease.

Theological schools are the recipients of immense sums from time to time. A vast amount of wealth is lavished on art. Half a million is bestowed upon the department of astronomy in the great university now starting. Practically nothing is given to aid enthusiastic men to seek out the causes and cures of disease, to lessen the number of the lame, the halt, and the blind that may be seen on our streets, in the hospitals and asylums. Medical men of scientific bias and training do not acquire large fortunes. Several physicians of international reputation have died in the past three years in Chicago—men who were well known throughout this broad land as medical teachers. So far as I know not one of them left an estate valued at more than fifty thousand dollars. Medical discoveries are not preserved to enrich the authors by regular physicians; but are donated to the profession and so to the public. Commercial medical men who often acquire fortunes are not interested in the scientific aspects of the work and hence little can be expected in the way of endowment for medical instruction from the medical profession. To a considerable extent medical teaching is gratuitous.

Post graduate schools there are that are of incalculable value to the profession. Hundreds of physicians annually avail themselves of the advantages they afford and so the standard of skill and knowledge is constantly advanced. A majority of physicians however, cannot make the sacrifice of business necessary to enable them to devote several consecutive weeks to study; and so they fall behind in the rapid march. Let the University extension plan be applied in post graduate study. If the mountain will not go to Mohammed, let Mohammed go to the mountain. In the city teachers may be provided where groups of ten or twelve can be found who desire to study any special course in their own locality. This in my judgment would give a great impetus to medical study throughout the whole profession. Physicians are willing to pay for such instruction if they can secure it without too great sacrifice of time. In microscopy and bacteriology, which are of the greatest value there is no bar to a proper study in such a manner. In addition to valuable knowledge gained making better sanitarians, diagnosticians, and practitioners, there will spring up more harmony in the profession, and best of all, will come a thirst for more knowledge, which is the most important feature of any education.

58 State St., Nov. 10, 1892.

THE TREATMENT OF SPECIFIC AND NON-SPECIFIC URETHRITIS BY TOPICAL OLEAGINOUS MEDICATION.

BY EUSTATHIUS CHANCELLOR, M.D.

So much has been written and published on gonorrhœa that the medical world has a certain distaste for any new literature on the subject; suffice it to say that the numerous nostrums and panaceas for it, are nearly as common as the disease is prevalent, and hence I feel a sincere misgiving in even attempting an allusion to this subject, not to say anything of the many benefits to be derived by the novel treatment hereinafter described.

More than a year ago, while on a vacation, I was in charge of several hundred men, some of whom were afflicted with the clap, and having but limited means at hand for their treatment, I was in a quandary as to the best method to pursue. The majority of the cases which came under observation were from five to twelve days after incubation, being just about the second period or stage of the disease, which was marked by an abundant, thick, greenish-yellow discharge, considerable pain on micturition, much heat of the caput and body of the organ, with redness of the urethra and meatus.

My attention had long since been directed to the remarkable properties of the chemical compound known as campho-phenique. Its high antiseptic and anæsthetic properties, its freedom from irritant effects, and its complete solubility in bland fats and oils, had early suggested its usefulness in the treatment of many dermatoses, and its tested and proven value in these, in turn, suggested its employment in the condition of things with which I was confronted.

Alkaline baths and a suitable regimen were enjoined, and each individual was directed to use the following injection from four to six times daily, by means of a small blunt-pointed syringe, the contents (about two drachms) being retained from one to two minutes:

℞. Campho-phenique, 1 to 2 drachms.
Benzoated zinc oxide ointment, 1 ounce.
Sweet oil sufficient to make 4 ounces. M.

This in a short time caused an amelioration of the symptoms and a rapid convalescence.

The constant and almost daily use of campho-phenique has suggested several beneficial oily combinations. When properly prepared and used judiciously, the effects are as startling as the cure is speedy and permanent. A satisfactory experience has demonstrated that this agent, when mixed with oils or fats, is one of great value in venereal diseases, having properties which, for the sake of brevity, may be expressed thus:

1. It is an antiseptic, a local anæsthetic and, in proper dilution, entirely innocuous to the tenderest urethra.

2. The vehicle should be albolene, benzoinol, any bland oil or fat, or an ointment.

3. As an injection it appears to palliate the sensitiveness of the mucous membrane, and to act as a varnish over the entire tract, thus allaying the scalding and irritation subsequent upon micturition. Pain is greatly mitigated after the first few injections, each of which should be retained for several minutes.

4. Campho-phenique readily mixes with aristol or iodoform, should such a combination be desired. One scruple of either substance may be added to each drachm of campho-phenique. But small amounts of such mixture should be ordered, as they must be freshly made every day or two. It is well to remember that the antiseptic index of campho-phenique is many times that of either iodoform or aristol.

5. Campho-phenique injections, as described above, have proven highly efficacious and satisfactory in cases of erosive granulations, ulcers and indurations of the urethra. The troublesome discharges due to inflammation of the lacunæ of the urethra succumb quickly to such injections, and danger of subsequent stricture is very much lessened.

6. The duration of the disease is remarkably lessened by the described treatment, the average length being from twelve to fifteen days, and could, I think, be further shortened by increasing the daily number of injections.

The following are given as examples of the mixtures spoken of above (4):

℞. Campho-phenique, ½ to 1 drachm.
Iodoform, 1 to 1½ scruples.
Albolene, 2 ounces. Mix.

℞. Campho-phenique, ½ to 1 drachm.
Aristol, 1 to 1½ scruples.
Benzoinol, 2 ounces. Mix.

℞ Campho-phenique, ½ to 1 drachm.
Bismuth subnitrate, 2 drachms.
Olive oil, 2 ounces. Mix.

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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(Continued from page 691.)

Brain abscesses are never a primary disease. They are always the result of traumatism, pus contact, or pus migration, and are usually caused from otorrhœa. They affect the white rather than the gray matter, and being usually found in the temporal lobe—in which are neither motor or sensory nerve-tracts—distinct localization symptoms are apt to be conspicuous from their absence. This is equally true of abscesses in the frontal lobe, which may be entirely destroyed, without producing special signs.

Mr. Field says that "The more acute forms of abscess, give rise to the signs usually attributed to meningitis or encephalitis, while the more chronic ones give rise to no symptoms whatever, until the abscess extends sufficiently near the surface of the brain to light up an inflammation of the membranes, when it becomes suddenly revealed. The probability is that chronic abscesses may exist for years without trouble. It is probable also that recoveries from such abscesses have taken place, the pus undergoing fatty degeneration, becomes quiescent, the fat is re-absorbed, and the fibroid sac shrinks and contracts upon a cretaceous residue."

Abscesses that develop slowly are often encapsulated. Acute abscesses are not usually encapsulated. It is possible that a larger proportion of abscesses are encapsulated than would appear, owing to the possibility of a primary retention of pus within its walls, and a subsequent disintegration of the capsule, with a diffusion of the contents.

The symptoms that may be expected in cerebro-aural pus deposits are often vague and indefinite. This may be attributed to the frequent lack of brain pressure, owing to the many places where pus may lodge, and accumulate, even in large quantities, without materially compressing sensitive brain substance. It may also be due to the fact that brain abscesses following ear diseases, are usually located in lobes containing no sensory or motor nerve tracts, and in consequence enormous destruction of their substance may take place without active symptoms supervening. An explanation may also be found in the fact that a constant draining of the abscess occasionally occurs through the middle ear, or mastoid bone, by spontaneous or operative openings. An abscess may approach in this insidious manner, without sounding a note of warning, until suddenly it will burst into sensitive portions of the brain, and death may occur before one is fully aware of danger, although a majority of these cases have symptoms to which brief allusion may be made.

The patient usually has suffered from a chonic otorrhœa. The discharge may be profuse, unaccountable, and uncontrollable, or it may, for some reason, either spontaneously or from injudicious treatment, suddenly materially lessen or nearly cease, and it is under such circumstances that symptoms occur, pointing to brain complications. We note primarily continuous severe pain in the head, focussing in one particular spot corresponding to the principal seat of of lesion, and we would consequently look for pain in the side of the head, in case of a complication of the temporal or middle lobe, and in the occiput when the cerebellum is involved. The pain becomes worse during febrile exacerbations, and pain in the affected ear will also be frequenly noticed. The mastoid is often tender, painful and swelled, while nausea and vomiting are often present, and probable constipation of the bowels. Rigors, all the way from a chilly sensation to a pronounced chill may be present, and when seen, should instigate active measures. No positive reliance can be placed on the sudden accession of febrile symptoms, as the same conditions might be found in a case of pure otorrhœa, with pus retention.

It is a generally accepted opinion that cerebral abscesses produce a sub-normal temperature. These records hardly endorse this view. A high temperature is recorded eight times, a medium temperature *forty-two times, and a sub-normal temperature only* twice. In one hundred and fifteen cases the temperature is not mentioned, and in these latter cases it is fair to presume, that the temperature was not a conspicuous feature, or it would have been noted, especially had it been sub-normal. The post-mortem reports show 98 cases where brain abscesses were found, and only two cases, as before mentioned, are recorded where a sub-normal temperature existed. In both these instances, however, it is but fair to observe, a brain abscess was disclosed after death.

The conclusion therefore, is forced upon us, that while a sub-normal temperature *may* by indicative of a brain abscess, when found in such cases, we need not feel that a sub-normal temperature *must* exist, in all cases of brain abscess.

It will be observed also, that a high temperature is recorded only eight times. In these cases, the autopsies did not show brain abscess to be the predominating feature. Almost invariably, thrombi in different locations, and extensive necroses were the leading post-mortem appearances. From all we can learn, therefore, the temperature and pulse are *moderately* elevated in cases of auro-cerebral abscesses. Occasionally the pulse has been found very sluggish. Toynbee has recorded one case where the pulse beat was from 16 to 20, and Wreden has observed one case where it was only 10 to the minute.

Delirium, partial or complete unconsciousness, vertigo, somnolence, and convulsions are noticed in most cases, and coma is generally one of the last symptoms observed. The different forms of paresis and paralysis are often seen, and are chiefly noticed in the arms, legs, face, lids, and by strabismus, dilitation of the pupils, diplopia, paralysis of the auditory nerve, and incontinence of urine.

Inasmuch as the seventh nerve passes through the tympanum, in the Fallopian canal, parts supplied by it are apt to be paralyzed, when tympanic necrosis is an element in the case.

Attention should be directed to inflammation and paralysis of the optic nerve, as it is a symptom that is not often sought, and one to which some authors attach much importance. It would probably be found oftener if the ophthalmoscope were more frequently brought into requisition, and this instrument should certainly be used when amblyopia or amaurosis are present, as they are occasionally.

Truckenbrod regards aphasia, as a symptom of invasion of the temporal lobe, and Wernicke claims that aphasia indicates a disturbance in the posterior 3d of the 1st left temporal convolution.

It is undoubtedly true that in the cases I have grouped together, aphasia is present *only* in those cases where there was a purulent involvement of the left temporal lobe. The records do not show, however, whether it occurred in the posterior 3d of the 1st left temporal convolution, but it must not be forgotten that distinct abscesses were found by *post-mortems* to be present in 40 temporal lobes, of which a good proportion were on the left side, and in but six of such instances, was aphasia present. This remark does not include those cases of pus *diffusion* over the temporal lobe.

The question of a differential diagnosis with brain tumor may arise, in the history of such cases. One very important point in enabling us to arrive at a conclusion in such an instance, is the fact that in brain tumor all the symptoms are quite certain to be constant, with an ever increasing tendency to become worse; while in abscess, the symptoms usually become worse during febrile excitement, and have a vacillating course.

Von Bergman says that the nearer the abscess approaches the posterior division of the frontal convolution, the more apt are we to observe strabismus, disturbances of speech, and irritation or paralysis *of the facial nerve.*

From my review of these 169 cases, I have ascertained *the symptoms recorded as occurring in cases* where the autopsies have shown the cause of death to have been, the *intra-cranial presence of pus, outside of the veins and sinuses.* They are as follows:

Deafness	9	Aphasia	5
Head pain	38	Stupor	12
Ear pain	16	Somnolence	7
Chills	16	Tinnitus aurium	2
Temp. sub-normal	2	Insomnia	1
" medium	7	*Meningitis*	4
" high	2	Optic neuritis	3
Pulse sub-normal	2	Incontinence, urine	2
" medium	7	Nausea and vomiting	29
" high	2	Mastoid tender and swelled	11
Facial œdema	1	Paralysis of limbs	18
" herpes	1	Pupils contracted	4
Nystagmus	1	" dilated	4
Neuralgia	1	Strabismus	4
Constipation	19	Diplopia	1
Delirium	19	Amaurosis	1
Maniacal	1	Facial paralysis	13
Unconsciousness	9	Amblyopia	1
Convulsions	21	Ptosis	1
Epilepsy	3	Paralysis of auditory nerve	1
Vertigo	13	Episthotonus	1
Coma	29		

I have also prepared a table showing symptoms that occur in *pure* cases of the intra-cranial presence of pus, *uncomplicated* by any lesion of the veins or sinuses. These symptoms do not occur in any other class of cases under consideration.

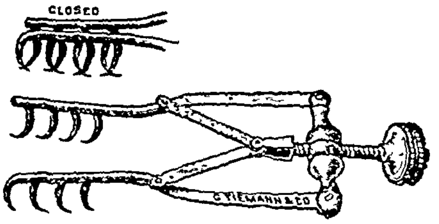
Deafness.
Temp. sub-normal.
Pulse sub-normal.
Maniacal.
Epilepsy.
Aphasia.
Insomnia.
Pupils contracted.
Pupils dilated.
Paralysis of auditory nerve.
Incontinence of urine.
Paralysis of limbs.
Facial œdema.
Nystagmus.
Neuralgia.
Constipation.
Amaurosis.
Ptosis.
Tinnitus aurium.

And I have also noticed those symptoms that have occurred in both forms of the disease, but have predominated in those cases where there was an intra-cranial presence of pus, outside of the veins and sinuses. These are as follows:

Coma.
Convulsions.
Unconsciousness.
Somnolence.
Stupor.
Nausea and vomiting.

We now turn to the subject of the treatment of these cases. There is but one resort for an intelligent surgeon, and that is to operate. The question simply is, when to do it and how to do it?

In a case of either acute or chronic otorrhœa with or without mastoid symptoms, where brain phenomena supervene, we should first give the patient the benefit of a doubt by freely opening the drum-head, both in its lower segment to secure good drainage, and in its upper posterior portion, where pus is prone to lodge. The patient should be kept quietly in bed, and the fountain douche, with very hot water should be allowed to run into the ear every hour during the day, and several times at night. Inflation should be used once or twice a day. A few days may be allowed to elapse—unless extra-dangerous symptoms occur—and if the patient is not then practically better, the mastoid process should be freely opened. As large an opening as possible should be secured. If the mastoid speculum devised by myself be used, the operation will be practically bloodless, and made with much greater facility and certainty.



I feel sure the mastoid should *always* be opened in such cases, before the skull is opened, as there is a very reasonable chance, that the mastoid antrum or cells, may be the focus of disease, and that this operation will suffice. The records that I have compiled show conclusively that in some of the cases, a much better and speedier result would have been obtained had this idea been adopted.

We may find within the process, for instance, caries or necrosis of the inner mastoid plate, or even a fistula, that may solve the whole problem, and render further operative interference unnecessary.

In case a softening of the internal mastoid plate is found, the diseased bone should be gently cut away, and if a perforation is easily made, it should be accomplished, the aperture enlarged, and the operation concluded in the same general way, as will be described later on.

If the perforation is not quite easily made, the procedures should be stopped at this juncture, and we should await developments.

If a fistula of the inner mastoid plate is found, it should be enlarged, and the operation concluded, as will be subsequently described.

In case the mastoid operation fails to relieve the patient, a perforation of the skull must be made. It may be deemed advisable to again direct our interference to the mastoid plate, in case a fistula has not been found, and if we found necrosis of the inner wall, but did not make a perforation at the first operation.

"Experience alone can tell whether after all it is best to seek for temporal abscesses, directly from the roof of the mastoid process. At all events, it offers the advantage of leaving the entrance of the wound *lower than the abscess*, so that the pus flows off easier, and the skull is not injured, sometimes very advantageous to the patient." (From Von Bergman.)

It is of course, evident that perforation of the inner mastoid plate, is only advisable in those cases where the indications point with reasonable certainty to an involvement of one of the middle lobes of the brain, especially the temporal.

An accurate diagnosis as to the seat of the abscess is of the utmost importance, and the leading points, so far as it is at present known, for such a diagnosis, may, I think, be gleaned from the preceding pages of this article. The two principal objective foci for operation, will be the temporal lobe and cerebellum.

In case we decide to perforate the skull, with the hope of locating an abscess in the temporal lobe, where is the best seat for operation?

This question may sometimes be answered after the proper flaps have been made, by the finding of an area of softened, necrosed bone, or possibly a fistula. In the event of such a discovery, the operation may be made at this point, the necrosed bone should be removed, and an opening effected, or the fistula should be enlarged.

But in case we are not guided, as before mentioned, the best place for opening is just above, and perhaps a little in front of, the bony meatus, directly over the superior line of the zygomatic arch, the temporal lobe at this point being about $1\frac{5}{8}$ inches wide.

This exposes the dura-mater near the tympanic roof, without wounding the middle meningeal artery, and is about the most dependent portion of the middle cerebral fossa, the squamous bone being exceedingly thin at this point, and easily perforated. The opening may be made with either the drill, chisel, dental engine, or trephine, and should be sufficiently enlarged, and the edges smoothed. Personally, I do not like the chisel, either for this operation or for opening the mastoid process. I do not feel that it is advantageous to an already inflamed process, or brain, to pound it. Salzer suggests that the concussion might cause the rupture of an abscess into the ventricle, or the sub-arachnoid space. I have operated upon 83 cases of mastoid abscess, with the drill, and have had uniformly smooth operations, never having struck the lateral sinus but once, and then experiencing no ill effects from its exposure.

Before the operation, the scalp, for a large area, around the field of operation should be shaved, and thoroughly scrubbed and cleansed antiseptically.

Chloroform should be used instead of ether, as it produces greater quietude, and less cerebral congestion and tension. The auricle should be dissected down, so as to thoroughly expose the position of the bony meatus. It may be held down by an assistant and suture, and will then be out of the way, and will not interfere with the steps of the operation.

A large circular flap should be made, with a broad base, sufficiently extensive to thoroughly expose the field of operation. This may be held back by an assistant and a suture. The parts may then be held apart by my mastoid speculum, which will also control the bleeding, if the blades are widely separated. If hæmorrhage however, should annoy the operator, Lanphear recommends hot (115° Fahr.) water to be applied to the parts, and this should be ready for use during the operation, and must be thoroughly antiseptic.

(*To be continued.*)

SELECTIONS.

EDUCATION AND RESEARCH.—Professor Virchow's recent rectorial address to the University of Berlin will appeal to a far wider audience than that great University, and has a weight deriving not only from the importance of the subject discussed, but also from the position and great endowments of its author, whose attainments as a pathologist are equalled by his wide philosophical culture and his rich experience of life.

After touching upon the value of such annual occasions, when we examine ourselves, sum up our gains, prove our methods, and glance into the future, the Rector went on to say that the vast changes in the sphere of learning during the last half century had amounted to a revolution. Our older methods have been found wanting and are largely broken down, and the position both of school and of university teaching must be conceived afresh. This no man can do from the universal point of view; no man is a "Träger alles Wissens"; we must, therefore, all contribute, each from our own standpoint.

The conflicts between students and authorities in Germany, deplorable as at one time they were, have happily ended in securing freedom of teaching and freedom of learning, teacher and scholar having each his own independence and responsibility. The student who comes up from school to university is tempted by this absence of restraint to self-indulgence or pleasure, but if by these seductions he wastes even the first term, he may find it impossible to recover the lost ground; and if at the end of his university career he has not reached an average place in his education, he will probably be a bungler for the rest of his life, as the opportunity for "freedom of learning" will probably never return.

Out of the practice of this "freedom of learning" comes delight in learning, and this will decide for him between the various kinds of learning; a university uses no compulsion, and unhappily of late years the influence of teachers can be but little upon individuals, but is exercised upon the students in the mass. It is said that there is thus some falling off in the forming of students. In medicine especially is this true, wherein a student comes strange to an oppressive fulness of new ideas and new subjects of study, and is soon disheartened if the groundwork has not been well laid at the beginning.

What is to be done, asks Virchow, under this overwhelming progress of knowledge, time remaining the same or even growing less, so that both teachers and scholars are overweighted? So large a question could not be fully dealt with in an address, but certain aspects of it were considered. In the first place, the Rector appealed to the higher schools to kindle the "love of learning" rather than stuff their scholars with much information of a positive and detailed kind. Moreover, he called upon them to send up scholars *competent for independent study*, young men able to pursue their own course of work, not leaning upon others, not needing special stimulants at the hands of their teachers.

In detail, of course, each faculty must indicate its own requirements, but if love of study and self-help be previously brought out, the development of the student will be continuous, "Every normal child loves learning," has joy in new objects and in new uses for its organs, special senses, and reason, and whatever the variety of inherited talent this disposition should increase with its years. Two dangers, however, beset it—the danger of crushing this love, as too often it is crushed, by unfit or dull methods of teaching, and the danger lest thirst for knowledge degenerate into mere desultory curosity. Against the latter tendency the historical method is the best preservative.

In the next place Virchow appealed to the higher schools to weigh well their duties in respect of the two classical languages which hitherto have enjoyed the "lion's share" of the curriculum. Latin is inherited by our grammar schools from the time when it served the precious purpose of welding all Western thinkers together; now "national tongues have come into their natural rights," and we have succeeded to and sanctioned a state of "Babylonian confusion of tongues." The welding function of Latin is therefore ended, and, on the other hand, the works of Latin writers are seen to be far inferior to those of the Greeks, who were the fecund sources of thought and form. "Homer, Aristotle, and Plato are in our day the masters of the nations." So by culture and custom Latin must recede, and its grammar, to which its methods have largely fallen, will not much longer discourage the youthful mind. Medicine indeed alone of all the faculties has an unbroken tradition of 2,000 years from the Greek, but even to it Hippocrates and Galen are no longer of use, and Greek is seen rather to have its place in the spheres of philosophy and poetry.

For modern teaching, mathematics, philosophy, and natural science are the prime methods—"the golden triad" upon which progress rests. From them we shall derive that large wisdom which the Ionian Greeks taught us to desire. In the schools, therefore, youths must be led to study the principles of astronomy and biology in their simpler aspects, for astronomy is the pattern of mathematics and physics, and in chemistry they must learn the art of experiment. Yet weight and measure are not all. How shall he, whether theologian, jurist, physician, or schoolmaster, consider psychology who has not learned the forms of thought? If philosophy cannot be taught in schools, they must teach "respect for philosophy." Finally, the Rector pointed out the farther difficulty that universities stand now in mid fight between the claims of the higher education on one side and of technical training on the other. Experience has not yet taught us to decide between these rival claims, and teachers vacillate. No compromise is as yet in sight.

It must be admitted that mere special training can be given without that larger development of the whole man at which universities aim. For such specialist studies technical schools and seminaries suffice. A university is not a mere aggregation of technical schools; it aims at an interpenetation of all faculties, at general conceptions. Unhappily, from the lack of preliminary training in the higher schools, university teachers have their time wasted in foundation work. Now, if a university is to hold its proper place, it must be not only an institute of learning, but also an institute of research, and the former cannot exist without the latter. University teachers should therefore have more time at their disposal than other teachers, and should not, because of deficiencies of the schools, have this time occupied in elementary instruction. The university must be an association of leading thinkers and investigators in free coöperation, and their students must come to them with a love of learning and with their faculties trained to the independent pursuit of it.

At this moment, when the establishment of a new and great university is under consideration, and when public school teaching is chaotic and unfruitful, we have felt it to be our duty, even at some length, to set forth these wise words of one of the leading thinkers of our profession.—*British Medical Journal.*

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SATURDAY, DECEMBER 17, 1892.

ON FORMS OF ALBUMINURIA YIELDING A FAVORABLE PROGNOSIS.

That certain forms of albuminuria may exist without disease of the kidneys, or, at least, without a primary affection of these organs, is a well established clinical observation; but the fact that, as a rule, such cases afford a favorable prognosis is not generally accepted. Without including unavoidable albuminuria, where the presence of blood or pus in the urine fully accounts for the existence of the albumen; nor febrile albuminuria, where the albumen is clearly the result of elevation of bodily temperature, or disturbance of circulation in the kidneys, we have remaining for consideration a well-marked group of cases in which albuminuria has its origin or immediate cause in some alteration, either transitory or more or less permanent, in the composition of the blood. FOTHERGILL, in his monograph on "Vaso-renal Change *versus* Bright's Disease," summed up the evidence in support of his favorite view that the presence of an excess of uric acid in the blood is the starting point of the arterio-capillary fibrosis, of which the cardiac hypertrophy, the increased arterial tension and the progressive degeneration of the kidneys with albuminuria characteristic of Bright's disease, are the natural sequences. The increase of uric acid and similar primitive excrementitious material, he attributed to a failure of the liver to sufficiently elaborate the nitrogenous material so as to convert it into the more soluble form of urea, since some of the lower animals (for instance, birds and snakes) discharge a urine consisting almost entirely of urates or of uric acid, he considered that this excess of uric acid in the human organism is an indication, on the part of the liver, of reversion to a lower type. Thus an overworked, especially a naturally inadequate, liver, being unable to perform all the duty imposed upon it in the way of converting excrementitious nitrogenous waste into urea, would readily revert to a more primitive type of organ and furnish uric acid instead of the more highly oxidized urea. The effect of such a failure on the part of the liver would be to give rise immediately to the condition of lithæmia, and this in turn to more or less frequent acute attacks of gout, either in its typical form, or in its more obscure manifestations in lesions of the nervous system, and of various individual organs. The kidneys of patients in whom this state of the blood has existed for any length of time are so commonly found to be the site of cirrhosis, that the small, contracted kidney is frequently called the "gouty kidney." Hypertrophy of the left ventricle of the heart, and atheromatous degeneration of the aortic valves, are likewise now considered as preëminently gouty in their origin; since they are found commonly associated with the other signs of this diathesis which have been already referred to.

More light has been thrown upon this subject recently by an observer whose previous contributions to the pathology of Bright's disease and his work in the field of clinical medicine and diagnosis, entitle him to speak with authority upon these mooted questions as to the origin of albuminuria. At the annual meeting of the Philadelphia Pathological Society last month, PROFESSOR J. M. DA COSTA delivered an address, taking for his theme "The Albuminuria and Bright's Disease of Uric Acid Formation and Oxaluria." He first insisted upon the fact that there is a distinct group of cases of the kind with albuminuria, the pathology of which is not clearly understood; but which, clinically, are easily separable from the classical forms of renal disorder. They are unlike in origin, pursue a different course, call for special treatment, and have, as a rule, a favorable prognosis.

The diagnosis of this form of albuminuria from the typical forms of Bright's disease, is not difficult. In the first place, the albumen, which is variable but never present in large proportion, is accompanied by casts only exceptionally, and these are of the epithelial variety, never fatty. The most marked characteristic, apart from the albuminuria, is the high specific gravity of the urine. In many cases this was the first symptom which excited attention; the urine is persistently 1025, 1030 or above. It is acid in reaction, and contains, in one class of cases, an excessive proportion of uric acid and urates; in another, there is marked oxaluria, or both forms may coexist. The principal symptoms are digestive disorders, flatulence, constipation, depression of spirits, and in fact the usual nervous and digestive symptoms of lithæmia. The absence of dropsy is noteworthy, as well as the entire absence of eye symptoms. It is also to be observed that in the class of cases under consideration, the arteries are not rigid, the pulse is not indicative of high tension, and the heart is not hypertrophied, although its action may be accelerated and the pulse may be intermittent. In the cases with oxaluria, there is to be noticed a greater amount of nervous depression and gloominess, but the same amount of dyspepsia as those in which there is excessive uric acid excretion. A tendency to an afternoon rise of temperature was frequently observed by Da Costa, in these patients.

The persistent high specific gravity of the urine, the absence of eye-disorder, of cardiac hypertrophy, and of high arterial tension, afford diagnostic data, distinguishing these cases from those of contracted kidney, which is the form of Bright's disease most likely to be mistaken for this albuminuria of uric acid formation and oxaluria. At the same time the lecturer was of the opinion that this condition might in the course of time, in exceptional cases, develop this form of Bright's disease of the kidneys, and he referred to such a case occurring in his practice.

It is a curious fact that nearly all the cases of this form of albuminuria occur in the male sex; the lecturer had met with only one case occurring in a woman.

The relation which this form of albuminuria may bear to cyclical albuminuria, the albuminuria of adolescents, and similar intermittent forms of albuminuria, is a question of immediate interest, which at once suggests itself to the mind of the reader. Prof. Da Costa considers the relation a very close one; especially since upon reviewing his notes of former cases of albuminuria of adolescents, which, by the way, occurs chiefly in boys, he was struck with the uniformly high specific gravity of the urine, the significance of which was hitherto not understood. The coincidence of the presence of an excess of urates and of oxalates in the urine was also noticed in going over the literature of the subject. The fact that boys are very active in their habits and fond of exercise must be taken into account, since Grainger Stewart stated that, in a company of soldiers after prolonged marching, it was found that a large proportion had albumen in their urine, an observation which has been since confirmed by others. The lecturer was inclined not to attribute the albuminuria directly to the effects of the exercise, but indirectly to the increased tissue change and the accumulation of excrementitious material in the blood resulting from the muscular exercise, thus producing a temporary lithæmia. He also was of the opinion that a great many cases of cyclical albuminuria, are really instances of this same lithæmic albuminuria and that they are likewise produced by increased excretion of tissue-waste.

The prognosis is good; the patients generally get entirely well. This is of great importance from the standpoint of the examiner for life-insurance since these cases are often rejected on the ground that they are victims of Bright's disease. He gave several instances in which the patients first learned of the existence of albuminuria through applying for life-insurance; and after being rejected they came for treatment; subsequently, they entirely recovered their health and the urine became normal.

The subject of treatment may be disposed of in a few words. In the first place, it is a great relief to the patient to be assured that he has albuminuria but not Bright's disease and that by regulating his habits of work and medical treatment he will get entirely over it. Dietetic regulation is of first importance. Da Costa does not insist strictly upon a milk diet, but milk as a food should occupy a prominent place. As long as the patient is able to take daily exercise, meat in moderation is allowed. Green vegetables and bread are permitted, but sugar, butter and starches generally are restricted or entirely forbidden for the time. Change of residence is often beneficial; several patients returned cured after a visit to Europe. As regards the special remedies to be used, he found laxatives of great service; indeed, good results usually follow the administration of the old fashioned blue pill at night and a saline the next morning. The activity of the kidneys should be maintained by citrate or acetate of potash, or similar drugs, and mineral waters used freely so as to flush out the tubules. It is of importance that exercise should be systematically taken, though not to excess. Inhalation of oxygen had not afforded decided results in his hands, but might prove of some service. Recurrence of the symptoms calls for repetition of this course of treatment.

The paper of which we have given the principal points will appear very shortly in full in the *American Journal of the Medical Sciences*. We congratulate the Pathological Society of Philadelphia, which in fact years ago was founded by Professor Da Costa, upon securing this valuable contribution to its annual volume of transactions.

APPENDICITIS IN FRANCE AND IN AMERICA.

From the discussion regarding appendicitis by the Paris Surgical Society (Bull. et mém. de la Soc. de Chir. de Paris, T. xviii), it is evident that unanimity of opinion upon some points as to treatment is not yet established in France, and that the French are somewhat behind the progress of American surgeons. The discussion as brought out in the society includes the etiology and pathology, the expectant opium treatment and early and late operations upon the inflamed vermiform, and is based upon the histories of cases presented and the results of operations performed. The adherents of the opium treatment (Berger, Moty, Marchant) thought that it was most advisable because they had obtained good results from its use even in cases where suppuration was highly suspected, and because recurrence of an attack is not always avoided by an operation. All are agreed that the indications for operation are positive when there is a large abscess that threatens to rupture into the peritoneal cavity, or when peritonitis has already commenced. The indications for an early operation are only relative and are dependent upon the presence of a positive swelling (RECLUS, SCHMIT). A swelling it is thought always indicates suppuration, even though the general symptoms have improved or the swelling decreased somewhat in size. Decision is not to be made until the swelling is positive, and then the indications would simply be those of an abscess.

As additional reasons for operation it was shown that the recoveries attributed to opium are fallacies, as recurrence is frequent and the cases usually come to operation at some later time; and also that the danger of an operation and of possible hernia is very slight. The earliest operations, where the indications are based upon symptoms alone, were not discussed and do not as yet seem to have been strongly considered by the French surgeons.

In this country, the opium treatment, although it is mentioned in the most recent text-book of American surgery, is hardly thought of by the practical surgeon. Operative indications are positive when there is a swelling and relative when based upon symptoms. The difference is evident and would seem to mean that either some men are still behind or that some are beyond the limits of rational surgery. There are American surgeons who are even more conservative than the French, who will defer operation until there are all the signs of an abscess or even until they see the pus in an exploring needle. These men are certainly behind the limits of rationality. The work of TREVES, MCBURNEY, SENN and others have placed appendicitis operations, either during or after an attack, upon a sound basis, and there is no need of waiting after the diagnosis is made. Among most advanced surgeons the position of appendicitis treatment is nearing the level of strangulated hernia; any involvement at all, either by symptom or sign, is a sufficient reason for operation. As was recently the case, a diagnosis was made three hours after the first symptoms and an operation performed within four hours, with the result of finding a perforation and saving the patient's life (VAN HOOK). This is certainly indicative of the highest treatment for appendicitis. The unfavorable prognosis because of resulting adhesions and *fistulæ* and the longer duration of the sickness, where interference is postponed under conservative treatment, are so important that resistance to early operations can no longer be maintained. America may also claim precedence, besides advocating the early operation, in that WILLARD PARKER of New York was the first to recognize appendicitis as an operable disease. The French surgeons look upon tuberculosis as an important etiology, and even in cases without tuberculosis in other parts of the body. As to methods, their discussion does not offer any new points.

REGENERATION OF MUSCLE.

RUDOLPH VOLKMANN has recently made an extensive study of the processes that result in regeneration of striated muscular tissue as shown in the skeletal muscles after typhoid fever, after the influence of very low temperature, in trichiniasis, and after injuries, actual and experimental. Among the results of his studies may be mentioned that in striped muscle the regenerative changes commence in the nuclei of old fibres with which the new elements may, or may not, remain connected. In the first instance the process corresponds to the formation of buds, as described by NEUMANN, while the development of new elements without direct connection with the pre-existing resembles the embryonal type of muscle growth. In both forms the proliferation of muscle nuclei and the growth of protoplasm around them form the beginning of regeneration and in both forms, which may go on side by side, the protoplasm early shows a fine fibrillar striation. A formation of new muscular fibres by means of longitudinal splitting of the old, was not observed by VOLKMANN. Muscular tissue is regenerated after the embryonal type in such lesions as affect the contractile substance only or principally; practically this means after the coagulation necrosis in typhoid fever and after exposures to low temperature. After solutions of continuity affecting sarcolemma and connective tissue the regeneration occurs by means of budding principally; the budding is usually terminal. *i. e.*, it occurs at the ends of the severed fibres, where nuclear multiplication by the direct method essentially takes place and a nucleated mass of protoplasm is formed, which grows rapidly in length in the same direction as the old fibres at the junction with which it becomes fibrillated. Such budding was observed to commence about eight days after the injury to the muscle and to continue for a variable length of time up to six or eight weeks. In regard to the ultimate result of the reparative activity in damaged muscle it was found that it was only sufficient to restore continuity in very minute wounds which might heal with pure regenerated muscular tissue. All wounds of any size heal by means of connective tissue which may become muscularized for one to two millimetres from each wound margin. Transplanted muscular tissue dies very soon, is absorbed and replaced by a scar each end of which is muscularized for a very short distance. In trichiniasis VOLKMANN could not observe any evidences of muscular regeneration. In typhoid fever degeneration and after exposure to cold of limited areas the regeneration was found sufficient to restore the affected muscles to their normal condition. In these cases the process of regeneration follows the embryonal type, as already stated, and the nuclei of the degenerated fibres multiply by the direct method and new cells are formed which are known as muscle cells and which absorb the waxy, dead remnants and give rise to new fibres by growth in length, so that each cell forms one fibre or, by coalescing, several muscle cells form one fibre. Scars in muscle develop after the degenerative changes of typhoid fever only when hæmorrhage or other extensive lesion has occurred. The process of regeneration in the striated muscles after typhoid fever is so pure and undisturbed that no better object for the study of these interesting phenomena than typhoid musculature can be found.

DRUGGIST AND PHYSICIAN.

The fact that druggist and physician are not working as harmoniously as of old is evidenced by the growing tendency to examine and analyze their true relations, and by the fact now being made clearly apparent, that a large body of medical men are in a considerable measure dispensing their own drugs.

There can be no doubt that the druggist is a great source of comfort to the physician, and that when he devotes himself to the profession of pharmacy in the spirit of a scientific seeker after facts, he is laboring for the best interest of the physician and the patient and is deserving of support and encouragement at the hands of the medical profession as a whole.

But unfortunately for all concerned he has chosen to place pelf above honor in many instances, and by so doing has cast an odium upon his honorable profession and freed the physician from all general obligation by his piratical ventures in the domain of patent medicine, counter prescribing and other like abominations.

An interesting change has lately manifested itself in the conditions of his business and he bids fair to be driven into the field of legitimate pharmacy, because there is no longer a profit in the illegitimate branch which has until lately flourished so rankly in our midst.

Patent medicines, colognes, toilet articles of all kinds, even soda water fountains, are finding a place in the large department stores, and prices are being cut to a degree which makes the business unprofitable to the purchaser of small consignments.

And while thus assailed upon the one side our druggist finds danger upon the other in the threatened desertion of his disaffected allies the doctors, who recognize in the new preparations a means of relief from a dependence which has in many cases proven most irksome.

Independence should be the watchword of our profession. The moment we lose or even relax our hold upon it we lack the right to claim especial consideration at the hands of our fellows.

Our object and aim is ever to secure for those under our care the greatest amount of benefit, and to that end we are to devote our own best energies and sacrifice personal comfort and often health or life itself, in our effort to maintain our profession upon that high plane which its intrinsic nobility merits.

We welcome all discussions looking to better conditions of work and hope that the near future may show us increase of scientific therapeutics and pharmacy, a deeper sense of individual responsibility and absolute professional independence.

The Quack Question as Handled by the City Council of Mansfield, O.—At the meeting of the Council of the city of Mansfield, Ohio, on Nov. 29, 1892, an ordinance was passed by a two thirds majority, which prevents any quacks or itinerant venders of medicine, "toothpullers" or other imposters practicing their nefarious schemes in that city without first getting a permit from the Health Officer, who, by the ordinance, is required to be a regular physician. The ordinance also requires these quacks to display a diploma from some respectable college before the Health Officer can give them the necessary certificate entitling them to a license at all. On the presentation of said certificate to the Mayor, they can receive a license for which they must pay not less than $25, nor more than $50 a day, and are also subject to a fine of not less than $25, nor more than $50, for each and every offense for the violation of this ordinance.

The law goes into effect immediately after its publication and covers physicians, mid-wives, pharmacists and dentists. If every City Council throughout the State of Ohio would follow the example set by the Council of Mansfield, they would take a grand step in the direction of getting rid of quacks and imposters which infest all our large cities. This plan has been tried in Kentucky, and so far has proved to be of great advantage in getting rid of these leeches, and should be followed by all the States that have no special laws or that cannot get special legislation to remedy this great evil.

NECROLOGY.

Dr. Wm. H. Geddings.

Dr. Wm. H. Geddings, of Aiken, died at Bethlehem, N. H., after a short illness on August 27. Dr. Geddings was the youngest son of the late Dr. Eli Geddings, of Charleston, S. C., and a brother of the late Dr. Frederick Geddings, of the same city, and Dr. Edward Geddings, of Augusta, Ga. Of a family of distinguished physicians, he was himself one of the brightest ornaments of his profession in the United States.

Dr. Geddings was born in Charleston, S. C., on the 23d day of April, 1838.

He first studied medicine at the Medical College of the State of South Carolina, at Charleston, and afterwards prosecuted his studies in the universities of Vienna, Berlin, Prague and Paris.

At the commencement of the war between the States' Dr. Geddings entered the Confederate army in the line of his profession, and shortly afterward rose to the position of Chief Medical Purveyor of the army of Northern Virginia, which high office he filled with distinction until the close of the war. He then settled in New York City and commenced the practice of his profession, but the health of Mrs. Geddings becoming impaired by the Northern climate Dr. Geddings on that account, moved South to Aiken in 1869, where he has ever since been continuously engaged in active practice; but for the past twelve years or more he has also engaged in a summer practice at Bethlehem, N. H., returning each fall to Aiken, the place he loved, where he was highly esteemed and enjoyed a lucrative practice, especially among the large number of visitors who were suffering with pulmonary diseases.

Dr. Geddings was a learned and strong man and a great physician. It was not only as a successful practitioner that Dr. Geddings became noted. He also attained a national reputation for his learning and as a distinguished writer on medical and scientific subjects. His writings are numerous, and he contributed freely to the medical journals, especially on climatology and the diseases of the respiratory organs. He also contributed many articles on Dermatology, having been at one time a pupil of the great Hebra. The latest of these was "A Contribution to the History of Leprosy on the Eastern Coast of the United States," which excited much interest among Dermatologists. He prepared the article "Aiken" in Wood's "Reference Handbook of the Medical Sciences." Perhaps one of his best articles was that on "Bronchial Asthma," prepared for "A System of Practical Medicine by American Authors," edited by Dr. Wm. Pepper. At the time of his death he was member of the following Societies: The American Medical Association, The South Carolina Medical Association, The Climatological Association, The Dermatological Association.

Dr. Geddings was married in July, 1866, to Miss Adele Getty, the daughter of A. Getty, Esq., of Philadelphia, who was a most devoted and tender companion, and is left to mourn his untimely end.

Graham N. Fitch, M.D.

Dr. Fitch, died at Logansport, Indiana, Nov. 28, 1892, aged 84 years. Dr. Fitch was one of the most notable men of Indiana, born in LeRoy, New York. His grandfather was a soldier in the Revolutionary War, and his father in the war of 1812. The subject of this sketch was educated at Middlebury, and at Geneva College, completing his medical studies at the College of Physicians and Surgeons, New York. He began the practice of his profession in his native town in 1832. In July, 1834, he located in Logansport, Ind.

Dr. Fitch was a member of the Indiana Legislature in the sessions of 1836 and 1837, and 1839 and 1840. He three times served as presidential elector. In 1844 he was appointed to a professorship in Rush Medical College at Chicago. From 1848 to 1852 he was a Representative to Congress from his district. From 1856 to 1861 he was United States Sentor. While in Congress he saw the gathering sectional cloud, and pointedly warned the South of the fatal consequences to them of the war they seemed to desire.

In the Presidential election of 1860 Senator Fitch advocated the election of John C. Breckenbridge, of Kentucky, who was the candidate of the south. This action was misconstrued and he was heralded as a rebel sympathizer. His action was explained by his adherence to Democracy and his unwillingness to support Stephen A. Douglas, the northern Democratic candidate for personal reasons. There had been a difficulty between the two in the Senate, resulting in the sending of a challenge by Douglas to Fitch. The latter promptly accepted but as his marksmanship was unerring, friends of Douglas interferred, and while the duel never came off the feeling continued. Thus the support of Breckinridge and the misconstruction it led to. When the war broke out Senator Fitch organized the 46th regiment, and assisted in filling two other regiments. With his regiment he was placed under General Buell's command at Louisville, Ky., later he joined General Pope, and was immediately put in charge of a brigade. He participated in the sieges of Fort Thompson and Island No. 10. After the fall of these posts he was detailed, with his brigade, to lay siege to Fort Pillow, in conjunction with the navy under Commodore Davis. The day following the fall of Fort Pillow, Colonel Fitch captured and garrisoned Memphis. A few days afterward he moved up White River, Arkansas, and captured, by assault, the fortifications at St. Charles. At the last place he took prisoner the wounded commander of the Confederate batteries, the unfortunate Col. Fry, of Cuban notoriety. Col. Fitch had two sharp engagements with the Confederates in Arkansas, in both of which he was victorious. An injury received in that State, by the fall of his horse while on a reconnoitering expedition, compelled him to leave the service before the expiration of the war. He was an ardent Democrat, but he never hesitated to dissent from his party when, in his judgment, its course was not for the best interests of the country. Many years ago he retired from all active participation in politics.

As a public officer he always fearlessly and faithfully performed every known duty. As a physician and surgeon few men have been more actively engaged or met with greater success, and he continued to practice his profession for the good of humanity until his last illness.

He was a member of the Medical Convention, which met in Philadelphia in May, 1850, for the purpose of revising the U. S. Pharmacopœia, as a delegate from Rush Medical College, Ill., and was appointed upon the Committee on Revision and Publication. He attended many of the meetings of the American Medical Association from an early date, among the last were those at Atlanta and Chicago. He occupied the chair of Professor of Principles and Practice of Surgery in the Medical College of Indiana, for four years and was Emeritus Professor at the time of his death.

Dr. Enoch Fithian, formerly of Bridgeton, New Jersey, died at his home in Greenwich, November 15. He was the oldest graduate of the medical department of the University of Pennsylvania, having been a member of the class of 1815. He continued in medical practice in Cumberland county for fifty years, or about thirty years ago. He was the first secretary of the county Medical Society, and afterwards became its presiding officer. After his retirement from active practice, Dr. Fithian gave much time to local historical subjects, and he has left behind him many pages of retrospective local interest. He was said to be the oldest living Free Mason in the United States, his tenure of membership having covered fully seventy-five years. At the last election Dr. Fithian, with assistance, went to the polls and cast his eightieth annual ballot. One day in May last he celebrated his centennial birthday, his birthyear having been 1792.

Dr. James R. Leaming, of New York City, died December 5, in his seventy-second year. He was a native of Groveland, New York, educated at Genesee, and graduated at the University Medical Department of the city of New York. This latter event took place in 1849, and in that same year young Dr. Leaming took up his permanent residence in the city last named. He early took an esteemed position in the profession, becoming especially valued as a consultant in pulmonary diseases. In 1867 he was appointed visiting physician to St. Luke's Hospital, and later became the consulting physician to that institution, and to the Tremont House of Rest for Consumptives, also Professor of Theory and Practice in the Woman's Medical College. He was prominent in the scientific deliberations of the Academy of Medicine, and a few other societies, but he was reluctant, from reasons pertaining to his health chiefly, to take office in the bodies to which he belonged and of which he was an honored fellow. His final illness was ascribed to pulmonary and cardiac complications, not the least painful of which was a fibroid phthisis, the very malady that had oftentimes occupied his thoughtful attention, and that was the topic of his discourse before the Academy in 1876. He joined the American Medical Association in 1880. Nearly all his writings have reference to thoracic diseases and their diagnosis.

BOOK REVIEWS.

A POCKET MEDICAL DICTIONARY, GIVING THE PRONUNCIATION AND DEFINITION OF ABOUT 12,000 OF THE PRINCIPAL WORDS USED IN MEDICINE AND THE COLLATERAL SCIENCES. By GEORGE M. GOULD, A.M., M.D., etc., etc. Philadelphia: P. Blakiston, Son & Co. 12mo. pp. 317.

This little book is modern in its make-up, and adapted to the use of students and writers. It contains many useful tables and information of interest to the physician and pharmacist.

MEDICAL MICROSCOPY. A GUIDE TO THE USE OF THE MICROSCOPE IN MEDICAL PRACTICE. By FRANK J. WETHERED, M.D. (London), Member of the Royal College of Physicians. With illustrations. Octavo, pp. 406. Philadelphia: P. Blakiston, Son & Co. 1892.

This book attempts to give an account of the microscope and the optical laws that govern it, (p. 30), the microtome and its construction (p. 10), and the various methods of hardening and decalcifying (p. 12), of imbedding (p. 9), cutting (p. 11), staining (p. 35), and many other technological methods. The antiquated methods recommended astonish one and give us little hope for better work in the future from those who use this book as a guide. It seems astonishing that at this time no better, simpler, or more practical recommendations can be made to the physician than those here set forth. The most valuable part of the work consists in the pages devoted to the microscopical examination of clinical material for diagnostic purposes. In this part of the work there are a few not very good illustrations, and a fair amount of well arranged instruction and advice. A chapter is devoted to bacteriology, and the stereotyped figures and methods are used. Not a very great future for the work can be predicted, but in the hands of a good teacher it would become a cheap ($2.50) and convenient handbook for a laboratory course in clinical diagnosis.

THE ESSENTIALS OF HISTOLOGY, DESCRIPTIVE AND PRACTICAL. FOR THE USE OF STUDENTS. By E. A. SCHAFER, F.R.S., etc. Third edition, revised and enlarged. Illustrated by more than 300 figures, many of which are new. Octavo, pp. 302. Philadelphia: Lea Brothers & Co. 1892.

This beautiful book from the Glasgow University press is a valuable addition to our literature on this subject. It unfortunately does not maintain all the good qualities of the Section on Histology of Quain's Anatomy, by the same author. It must, however, be looked upon as one of the most complete manuals for class-room instruction, which we have at the present time. The arrangement of the course is admirable, and it is well adapted to a systematic laboratory course, with a live teacher. The amount of illustrations makes it possible to use it as a work of reference in a small way. The histological methods recommended are not of the most simple and uniform character. We believe that it would be a great improvement to have more simple and yet full and useful technological methods recommended. This book savors too much of the "shorter course in" series, but it has as few of the faults of such condensations as could be expected.

MCARTHUR DIARY FOR 1893.—Any physician who has not received a copy will receive one, on application, without expense. Address McArthur Hypophosphite Co., Ansonia, Conn.

MISCELLANY.

PRELIMINARY ANNOUNCEMENT of the sixth annual meeting of the National Association of Railway Surgeons, embracing the United States of America, the Dominion of Canada, the Republic of Mexico, to be held at Omaha, Neb., the last Wednesday, Thursday and Friday of May, 1893.

General Subject: Injury of the Cord and Its Envelopes Without Fracture of the Spine. 1. History, by Dr. Geo. Ross, Chief Surgeon Richmond and Danville R. R., Richmond, Va.; 2. Anatomical Landmarks, by Dr. Jabez N. Jackson, Surgeon Wabash R. R., Kansas City, Mo.; 3. Physiology of the Spinal Cord, by Dr. A. P. Grinnell, Chief Surgeon Central Vermont R. R., Burlington, Vt.; 4. Experimental Research, by Dr. B. A. Watson, Surgeon Pennsylvania R. R., Jersey City, N. J.; 5. An Experimental Study of Spinal Myelitis and Meningitis, by Dr. George A. Baxter, Division Surgeon Chattanooga Southern R. R., Chattanooga, Tenn.; 6. The Clinical Aspects of Spinal Localization, by Dr. Nicholas Senn, Surgeon Chicago, St. Paul and Kansas City R. R., Chicago, Ill.; 7. Diagnosis from the Standpoint of the Neurologist, by Dr. C. H. Hughes, Consulting Surgeon Missouri Pacific R. R., St. Louis, Mo.; 8. Pathology and Pathological Anatomy, by Dr. Samuel C. Benedict, Surgeon Richmond and Danville R. R., Athens, Ga.; 9. Prognosis, by Dr. Samuel S. Thorn, Chief Surgeon Toledo, St. Louis and Kansas City R. R., Toledo, O.; 10. Treatment, by Dr. W. A. Outten, Chief Surgeon Missouri Pacific R. R., St. Louis, Mo.; 11. Medico-Legal Aspects, by Judge J. H. Collins, Chief Counsel Baltimore and Ohio R. R., west of the Ohio River, Columbus, O.; 12. Statistics of the Amount of Money paid by the Railroads of the United States, during the last Ten Years, for Alleged Injuries of the Spine, by Dr. F. K. Ainsworth, Surgeon Southern Pacific R. R., Los Angeles, Cal.; 13. Clinical Report—1. from a Medical Aspect—(*a*) Permanent Injuries—(*b*(Alleged Injuries; 2. From a Legal Aspect—(*a*) Settled with Suit—(*b*) Settled without Suit—(*c*) Miscellaneous, by Dr. Geo. Chaffee, Surgeon Long Island R. R. Brooklyn, N. Y.

C. W. BROCK, M.D., Pres., E. R. LEWIS, M.D. Sec.,
Richmond, Va. Kansas City, Mo.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from December 3, 1892, to December 9, 1892.

By direction of the President, the retirement from active service on December 4, 1892, by operation of law, of Col. Anthony Hegar, Asst. Surgeon, under the provisions of the Act of Congress approved June 30, 1882, is announced, and he will proceed to his home.

Major John O. Skinner, Surgeon U. S. A., leave of absence granted on account of sickness, is extended six months on account of sickness.

Major J. C. G. Happersett, leave of absence on surgeon's certificate of disability granted in S. O. 178, Dept. Dak., November 18, 1892, is by Par. 6, S. O. 286, A. G. O., extended three months on surgeon's certificate of disability.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending December 10, 1892.

Asst. Surgeon L. H. Stone, from the "Pinta" and ordered home, one month's leave.

Asst. Surgeon L. L. Young, from the "Mohican" and ordered to the "Pinta."

P. A. Surgeon H. N. T. Harris, from the "St. Louis" and wait orders to the "Bancroft."

P. A. Surgeon V. C. B. Means, from Naval Hospital, Norfolk, and to the "Saratoga."

P. A. Surgeon J. M. Steele, from the "Saratoga" and to the "St. Louis."

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ORIGINAL ARTICLES.

THE RELATIONSHIP OF FOOD TO SCORBUTUS IN CHILDREN.

Read in the Section of Diseases of Children, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY E. F. BRUSH, M.D.,
OF MT. VERNON, N. Y.

The question of scurvy in infancy is, I think, one of the phases of children's diseases that has been lost sight of very largely in the study of pediatrics. There is no doubt but that the disease exists in infancy to a greater extent than we are aware, or should infer from medical literature. There can be little doubt when your attention is called to the fact, but that you will agree that many of the cases reported as rickets and marasmus, should be classified as scorbutus. Dr. Northrup, of New York, read a paper on scorbutus last September, in Washington, before the Pediatrics Society, and I think much good will come from this paper, which was a very interesting and instructive one, calling as it does the attention of pediatricians to the fact that such a disease occurs in infancy, and that it is characterized by very nearly the same pathological phenomena as is the disease in adult life. Now as this affection in the adult is well recognized, and the cause pretty well understood, I think it would not be amiss for me to call attention to some of the conditions in adult life that stand in a causative relation to the development of scurvy, and then we can see how prone to the affection the artificially fed infant of to-day must be. Every living creature on earth, or in the water thereof, subsists on matter that was once alive, and all food with the exception of a few condiments has been living, growing matter at one time. I think it can be safely affirmed that man is the only animal who not only kills his food, but makes it absolutely dead and sterile before he consumes it for his nourishment. The old adage, "that God sends the food, but the devil sends the cook," means more than has been credited to the saying. It has always been supposed that the unpalatable preparation of food was the devilish cooks' work, but I believe the cook whom the devil has sent to mislead us is the chemist. With his retort and his balances, with his reagents and his surmises, he has led us to believe that God has failed to do his work properly by uniting the nutritive materials in a living form, and possessed with a vitality that the chemist knows nothing about. He has taken up a deal too much room, and made things altogether too complicated. The chemist would have us believe that man needs for his nourishment only so much nitrogenized and so much non-nitrogenized matter; that the material with which the Creator has united these, and the vitality with which he has endowed it, is totally unnecessary. According to the advanced ideas of the chemist, a little jar of Liebig's extract of beef is far better than ten pounds of meat in the form we find it in nature. Milk that has been skimmed, dried and powdered, and mixed with a little cocoa butter, is far better than fresh milk from the laboratory of nature as the Great Giver has allowed us to procure it. I remember seeing it stated in some standard work, that when the chemist had reached his goal, armies would be able to carry in a small vial all the nourishment that was needed for their support for several days, instead of the weighty load of bread and meat which they are now obliged to carry.

I tell you gentlemen, the chemist has tried to be too smart, and we have been duped by him in many instances. Every living creature requires for his proper nourishment some raw living food. Every young living creature needs living food. The mammalia all take it direct from the living fountain, and young feathered tribes are supplied by their parents with living creatures for food. Even the young fishes consume the living animalculæ, and man seems to be the only one of God's creatures who thinks he knows better. The artificially fed infant gets his food from the knowing chemist, or must according to the prevailing fashion, have all the life sterilized out of it, if he gets any as nature supplies it without the intervention of the chemist. I am positive that there is more in organism, and the vitality that holds it together, than is dreamed of in our advanced chemical knowledge.

We know that the sea-faring man, the soldier, the peasant of a famine stricken district, are all subject to scurvy when they are deprived of fresh living food, and any growing vegetable, animal matter or other material not dead, will cure the disease. Milk retains its anti-scorbutic qualities for a few hours, so does meat after the animal is subjected to what we call killing. I suppose the muscular response to electric excitability will indicate the point at which meat retains its vitality after the animal has been killed, and I think it is a well known fact that vitality is the anti-scorbutic quality of a food. Now if the absence of this quality for any given time from the nutritive material of an individual, produces such dire results as scurvy, it must follow that this principle is a necessary condition for proper nourishment, and the chemist's idea of proximate principles being the only necessity for nutriment, must be a fallacy. Of course neither the medical man nor the chemist knows what vitality is, but it is with us everywhere, and by reason of its possession, we ourselves live and move, and have our being, and every article of food we consume was gathered together, and formed into nutritive food for us by the living and growing quality of vitality. Is it unreasonable to suppose then, we can get from this quality some sort of force that is necessary for our well being, and are we not depriving ourselves of some absolute necessity, when we eliminate every vestige of vitality from our daily bread? Since I have been possessed with this idea, I have observed several cases of simple dyspepsia recover completely by the use of live raw food. A few months ago, a patient came to me complaining of violent attacks of vertigo and temporary blindness. He had been losing flesh and strength for several months. I examined his urine, and found it to contain about 15 per cent. of albumen. He was directed to take nothing but living raw food—that is, milk not over four hours old, eggs laid but a few hours, raw oysters, raw clams, lettuce and other greens with no dressing, meat within a few hours after it was killed, eaten raw, apples, oranges and other raw fruits. No medicine except three drops of the tincture of nux vomica in water before meals as a placebo. At the end of fifty days the albumen had entirely disappeared. He had but few attacks of vertigo after he had the exclusive diet, and the attacks of temporary blindness never returned, and now after five months, he is in a better state of physical health than he had been before for years.

Now this one case proves very little, but it at least indicates that the diet must have had some influence in the man's recovery. I do not affirm that albuminuria always arises from the same cause, neither do I think any will affirm that defective nutrition is not one of the prominent etiological factors in Bright's disease, and if I am right in my deductions, one of the defects in our materia alimenteria is the absence of vitality; and if this is true regarding the adult, how much more must it be so with the luckless infant deprived of the normal living fountain which nature designed for its proper nutrition. I am firmly convinced that not only scorbutus and other serious affections arise from the absence of living food in the infant, but many of the weakly non-resisting babes succumb to disease, or live with more or less suffering, because of the absence of vitalized food.

One of the defects of the finite mind is its limit to be able to only harbor one idea at a time, and so when one man discovers a truth, he straightway imagines that he has solved all the mysteries of the science relating to the subject to which the discovered truth relates. I am willing to acknowledge that the vitality of a food is not its only requirement, but I am thoroughly convinced that it is one of the very important necessities to perfect nutrition. There can be little doubt that many children live who have been so improperly nourished (although fat) that life is more or less of a burden. A great deal of this may be due to their progenitors, their surroundings, and many other conditions, but some suffer by reason of improper food, and the method of its administration.

The French nation have as an executive officer in their scheme of government, a medical Health Officer. He has lately discovered that the death-rate in infants is so alarmingly large, that there is great danger of depeopling the nation, therefore he has issued an edict forbidding the use of the long tube nursing bottle in feeding infants, and I suppose he imagines that by this wise (?) law he will repeople France. If the death-rate could only be lowered by so simple an edict, our occupation would be gone; but we know that there are many other conditions, graver, more important and serious, than simply the form of a nursing bottle. There are very many things for us to find out before we know it all, but one fact I feel sure of, that the constant use of dead food with an infant is wrong. There is no greater field for the pediatrician, than the study of infant feeding. We must exclude from our councils, absolutely, the patent baby food manufacturer, and study how we can get a full supply of fresh, raw, living food to the unlucky infant who has to submit to an artificial diet, and then from the knowledge we are now in possession of, we will know that we are guarding the young, at least, from the danger of scurvy, and perhaps greater evils.

ACUTE MENINGITIS, WITH SPECIAL REFERENCE TO ITS TREATMENT.

Read in the Section of Diseases of Children, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY GEORGE N. HIGHLEY, M.D.,
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The differentiation of diseases of the membranes of the brain has been a slow and difficult process. At one time all were regarded as varieties of hydrocephalus; later as forms of tubercular inflammation; and there is much diversity of opinion among modern writers and investigators. But our present knowledge of these affections must still be more or less speculative. This is particularly true of their etiology.

Of simple acute meningitis we know nothing definite as to its cause; its early diagnosis is difficult, and its usual treatment very disappointing. Indeed, so fatal is the disease that physicians are apt to doubt their diagnosis in cases that recover.

The object of this paper is to urge the importance of early recognition and prompt active treatment in this by no means rare disease of childhood.

I will consider only primary simple, acute meningitis, apart from its existence in connection with any preëxisting trouble, for in the latter case if the antecedent affection be of little consequence, it need not be considered in the treatment; and if on the other hand it be serious and grave in character, its management, like the treatment of tubercular meningitis, brings up a larger question than is contemplated in the scope of this paper.

What is acute meningitis?

It may be defined as an inflammation of one or more of the membranes covering the brain. In the simple, not tubercular, meningitis of childhood it is the pia mater, or inner membrane, which is usually affected. On this account Huguenin has called it leptomeningitis, a nomenclature which has been followed by other writers.

Inflammation has some common characters which are constantly present no matter where the disease may be situated. These are: hyperæmia with increased arterial tension, followed by exudation into the tissues of certain constituents of the blood; alteration of structure and of function; increased cellular activity. Accompanying these processes, and as a result of them, there is elevation of temperature, swelling and pain.

The course of inflammation is much modified by its location and the character of the affected part—thus when the disease affects connective tissue the tendency is to the formation of pus; when serous membranes are involved there is likely to be dropsical effusion; and in all affected organs and tissues in which there is a special function, that function is either suspended or greatly exaggerated and perverted. In inflammation of the pia mater we have therefore practically an inflammation of a serous membrane which produces disturbances of the complex cerebral functions and finally, if it continues, their complete cessation.

The cause of the disease in the majority of cases cannot be ascertained; it is indeed doubtful if it can be definitely determined in any case. Rigid investigation into the etiology of my own cases has been rather barren of results. Exposure to excessive heat (hot sun's rays), to sudden changes of temperature—in fact to all the conditions and influences which are supposed to produce inflammations in other parts of the body, may possibly produce the one in question.

The symptoms of acute meningitis are often not clearly defined in the early stage of the disease. It is not unusual to hear of cases being treated for "malaria" or for some other affection until the progress of the disease sets forth in unmistakable signs its true nature. Too often, then, has the golden opportunity passed for arresting it, and the physician finds it his painful duty to tell the friends of the little patient the true character of the affection and of its gloomy prognosis.

Is early recognition possible? Often it is true the physician does not see the case until considerable progress has been made, but if the disease can be detected during the stage of congestion, and before exudation has commenced, there are opportunities for treatment which if taken advantage of, may mitigate the force of the attack or completely arrest it. One of the earliest symptoms of the malady is vomiting—persistent vomiting which cannot be controlled by the usual remedies. It is present in nearly all cases and should excite suspicion whenever encountered. Preceding it, in a large number of cases, there is a disposition on the part of the child to be dull and languid, lying about much of the time; or on the other hand to be fretful and peevish, shrinking from the glare of strong light, restless at night, starting and crying out in its sleep. We have thus two varieties of symptoms, produced in the one case by hyperæmic pressure upon the cerebral centers, and in the other by irritation of those centers. In the latter class of cases, convulsions are not infrequently the first sign of the approaching disease. With that class, too, pain in the head is a prominent and persistent symptom. In all cases the pulse-rate is at first increased and then lessened, and again becomes rapid should the disease tend to a fatal issue. Pupils at first contracted; later widely dilated—temperature above normal, never high. Not to dwell in detail too long upon the symptoms of the disease, I beg to recall to your minds one more most valuable sign, and that is the character of the respiration. Slow shallow breathing with at intervals a long-drawn inspiration, is I think pathognomonic of the presence of the malady. It is difficult to observe the full phenomena of what is known as the Cheyne-Stokes respiration, but suspirations are almost invariably present.

These symptoms are present in the early stage of meningitis in varying proportions; some of them being prominent in one case and absent in another. In a few cases there are alternate periods of cerebral excitement and of lowered function of the brain centers. Should the inflammation go on unchecked, dropsical effusion soon begins in all cases, and the symptoms then are those of brain compression—pallid skin, enlarged veins, dilated pupils, slow pulse, drowsiness, deepening into coma, from which it is difficult to arouse the child. This condition may be changed to one of renewed irritation for a brief period, but continued coma is characteristic of this stage of the disease. It is doubtful if recovery has ever occurred after the period of dropsical effusion has arrived.

Is there any remedy for this most fatal malady? Can anything be done to stay the hand of this death-dealing disease? If we turn to our modern text books for an answer, we are deeply disappointed to find not a single remedy recommended that can be given with any assurance of success. Yet surely something ought to be done. To see a child, previously healthy and strong, suddenly stricken with a disease that must shortly destroy it, if there be no means of relief, is indeed a sad and serious thing. It certainly ought not to be allowed to go on without a strong effort being made to arrest it.

Fortunately there is a remedy which, if rightly used, will in the large majority of cases prove successful. I refer to venesection. Its use in the treatment of inflammation goes back to the dawn of medical history. From the earliest times it has been successfully employed in the management of this class of affections. Though at times temporarily thrown into disuse by gross abuse, its inherent value has kept it prominently in the foreground as a most potent means of treating this class of diseases. If we will but bear in mind the pathology of inflammations—a brief account of which I have endeavored to present to you—we can readily perceive the *rationale* of the remedy. In the first stage there is always congestion. Now there may perhaps be a congestion without inflammation; it is hard to conceive of an inflammation without congestion. The relation which they bear to each other is not yet definitely determined. It is probable that hyperæmia is merely a factor in the phenomenon of inflammation, and not its cause. Nevertheless, it is a most important factor, and the process cannot go on actively without it. Blood-letting blanches the congested tissues, relieves the pressure in the vessels and thus blocks the progress of the disease. No other remedy can do this so efficiently and with as little depressing effects as does this one.

The question at once comes to your minds, "Why is it that a remedy so long known and so often brought to the notice of the profession should not have received a more unanimous approval?" If the evidence of its value be so convincing to the few who have made use of it, why should not their testimony induce the many to at least give it a fair trial? Well, the majority of physicians are timid people. At least they are afraid of public opinion in general and their own patrons in particular. They do not like to incur the displeasure of the community in which they practice. Blood-letting seems to laymen a heroic measure and so they prefer to have "other things tried first." It does not appear to alter their opinion to know that after those "other things" have failed there is little use in trying anything else.

There is another reason why venesection has not been more generally adopted in the treatment of this class of affections; it is because most doctors follow the advice of a few men who have enjoyed the reputation of being leaders in the profession. These leading lights do not advise blood-letting; it is true they have nothing else which they can offer with any assurance that it will be successful—still they do not recommend venesection. And "better," says the average doctor, "better to lose more patients while pursuing the practice of the teachers than to risk losing a few while using an unsound plan of treatment." For in the first instance they can always assure the friends of the unfortunate that they have followed the practice of the most eminent men in the country and hence nothing more could have been done. The measure of value of a remedy is not by whom and by what class of men is it used, but what is the success which follows its use.

Until some other and better means shall be brought forth, venesection must stand as the most reliable and the most successful treatment of meningitis and all other inflammatory affections. When and how shall it be performed? It is manifestly the duty of the doctor to do it at his first visit if the presence of meningitis seems reasonably probable. It is certainly far better to bleed a patient unnecessarily than to omit doing so when there is urgent need of it. How much blood may be taken? That of course will depend upon the age and condition of the patient. The amount must always be sufficient to stop the engorgement of blood in the affected part. A child of four years can readily lose five or six ounces; more is sometimes demanded, less is often sufficient. In every case if, after a lapse of thirty-six or forty-eight hours, there is no improvement or the symptoms seem more pronounced, the operation should be repeated; or else local blood-letting by means of leeches or cups should be resorted to. The value of local abstraction of blood depends entirely upon the amount of blood taken. It is of course equivalent to venesection when a like quantity has been obtained, though this is generally difficult to accomplish.

Second in importance only to blood-letting, in the treatment of meningitis, is the application of cold water to the head by means of cloths wrung out of ice-water. When changed frequently and constantly applied they are, I think, greatly superior to ice bags and a most valuable aid to venesection in the management of this affection. When ice bags are used, two at least are necessary and a sufficient quantity of water should cover the ice, so that the cold may be more evenly distributed. One of the bags may be placed under the head and the other over the superior part.

Of medicines little need be said. Their value in controlling inflammation is more than doubtful. Theoretically they do so, but practical proof of their efficiency is wanting. To attempt to accomplish this result by the use of large doses of dangerous, depressing drugs, is surely a hazardous undertaking. The one indication for giving medicines is the relief of suffering. Headache, pains in the head, restlessness, etc., are best relieved by the bromides and small doses of morphia.

Let me now give you some practical proof of the value of the remedy. I will read you the history of three cases, which will be typical of many others, the first illustrating abstraction of blood by means of cups; the second by leeches; and the third by venesection and leeches.

Case 1.—Michael Feeley's child, aged two years, was taken ill October 25, 1888. Convulsion lasting nearly an hour. Saw the child shortly afterwards. It was still unconscious, pulse rapid, 120 to 125, pupils contracted, eyes turned upward with slight strabismus. After a few hours semi-consciousness returned. The little fellow lay languidly on his bed, his eyes half closed, but could easily be aroused. The next day (26th), there was no improvement. Pulse 120, respiration 28, temperature 100.5°. The peculiar breathing to which I have alluded was quite marked. At brief intervals there would be a long-drawn sigh (suspiration) followed by short incomplete respirations. The patient had vomited somewhat before being attacked with the convulsion. It occurred a few times on this and the following days. On the day of the convulsion I directed the use of cold water to the head and counter-irritation over pit of stomach. There being no improvement on the following day I applied cups over each temple, drawing about two ounces of blood. Ice bags were applied to base and fore part of cranium, they being partly filled with water in order to be more easily adapted to the shape of the skull. This was essentially the only treatment. After the cupping the child seemed somewhat better; and during the next two or three days a very gradual improvement took place. On the evening of the 29th symptoms of brain congestion again became marked. The cupping was repeated, a like quantity (two ounces) of blood being taken. Improvement once more set in though little change could be noticed for three or four days. The child was pale and became much emaciated. Gradual convalescence.

Case 2.—Andrew Fenelon's child, age two years. Was called to see it March 26, 1890. The mother told me that it had not been well for several days, the following symptoms being present: restlessness, peevishness, frequent attacks of vomiting, sensitiveness to strong light and no desire for food. When asleep it would often cry out or scream loudly, but would not rouse up when spoken to mildly. In addition to these symptoms, I found a rapid pulse, contracted pupils, pallid skin and irregular breathing. It was evident that I had a case of meningitis to deal with. I decided upon a good leeching as the best way to meet it. Three were applied, one to each temple and one back of left ear. The bleeding was allowed to continue for several hours, so that it is likely that at least three ounces of blood were removed. The vomiting now ceased, though the little one continued to be quite ill for one or two days; some improvement was then noticed. Child quieter, does not have any more screaming spells and takes a little food. On the fourth day after leeching it did not appear to be quite so well; lest urgent symptoms might again set in I directed the application of another leech, with the direction that its bleeding should be encouraged for some time. This was in the evening. The next morning the little patient was lying quiet, breathing easy and regular. Convalescence now continued slowly but without further interruption.

One more case illustrating the value of general blood-letting in this disease. To vary the evidence somewhat I will give you the history of a case that occurred in the practice of a neighboring physician —a man who through more than sixty years of active practice has had unparalleled success in the treatment of this class of affections.

The doctor was called to see Lizzie S., aged thirteen years, at midnight March 11, 1884. She had been suffering for about four hours with the most violent pain in the head, which made her scream out at short intervals. Vomiting occurred very often, pulse frequent and almost indistinct. Small doses of morphia with ten grs. bromide of potash were given every two hours. Next morning (12th), no improvement; patient vomited everything given her—even a small drink of water—face very pale, pulse rapid, could hardly be felt. Notwithstanding this apparently very weak circulation, the physician bled her at 6 P.M. eight ounces (8℥viij). At 9 P.M., three hours afterwards, he visited her again. There had been no more vomiting since the bleeding. Pulse still weak, face pallid. Ice-water cloths and ice bag had been applied to her head constantly since the beginning of the attack, and the patient repeatedly declared that they gave her much relief.

March 13, 8 A.M., pulse distinct at 80; face red, excessive pain in head, will not permit ice to be taken away from it even for a minute. At 2 P.M. these distressing symptoms still continued. Three large leeches were now applied to each temple. After being removed, the wounds were allowed to bleed for some time—until indeed she was as pale as death. The physician was now somewhat alarmed, though he felt that the blood-letting had not been carried too far, gave her *one-twenty-fourth gr. morphia and ten grs. bromide* pot., to be repeated every two hours until pain was relieved. She received two doses.

March 14, 9 A.M., patient had had some sleep; still complains of head, though more comfortable than on preceding day. Morphia and bromide to be continued until relieved. 6 P.M. applied blister over whole forehead to relieve pain, which has continued. Patient's general condition seems to be decidedly improved.

March 15, 9 A.M. Pain in forehead much relieved. Slept well, pulse 88, skin not so pale. Medicines were ordered *discontinued unless pain returned.*

March 15, 9 A.M. Patient still improves, has commenced to take food (she took none whatever during these days of distress). Gave oil to move bowels. Applications of ice still continued because patient will not permit their removal.

March 17. Took away ice bags and directed cold water cloths to be used instead. Convalescence continued slowly and patient did not require further active treatment. On the 23d she said she felt very well, and was able to sit up a few days later. She made a good recovery.

OUGHT INFANTS TO BE WASHED DIRECTLY AFTER BIRTH?

Read in the Section of Diseases of Children, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

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Doubtless most physicians find themselves confronted by this question nearly every week.

The dire results in some instances, where infants have been subjected to severe exposure to cold, during a prolonged process of this part of their toilet, would perhaps lead one to think a negative answer should be given. On the other hand, there are cases that have seemingly received the same treatment, and come out unscathed by any disease the etiology of which is credited to undue exposure to chilling influences.

There is, probably, no hygienic measure more tempting to a good nurse, than to arrange the toilet of the little one, making its body sweet and clean, as early as possible after birth.

If, as the custom is, we look to nature, as manifested in the lower animals, for a solution of this problem, we find that all the domestic, and so far as we are able to know the wild animals, wash their young directly after birth.

Of course there are many reasons why this fact, even though natural, can be no criterion to our treatment of the human race. The human mother cannot perform for her offspring such duties in the manner which the lower animals exhibit, nor would she be expected to were it a practical, or even fashionable thing to do. Then, too, the young of the lower animals being more thickly covered with short hairs or fur, the process with them is more one of drying the already wetted surface, than any particular desire for cleanliness. It is a natural instinct, or desire, on the part of the mother, to promote a healthy reaction of the skin of her offspring, who, in a wet condition, has suddenly been transferred from a higher temperature to one considerably lower.

With the human infant there is a different natural arrangement. A child has little, practically no, protecting hair. At birth it is suddenly ushered from an aqueous solution of nearly 100° Fahrenheit, to an aerial temperature from 20° to 30° colder. In other words, it has quickly been surrounded by a cold wave.

Then, if the infant is fortunate, it is received into some warmed flannel or woolen garment, and allowed to rest until the mother is amply cared for.

Now, while a baby has no constitutional environments for warmth and protection from exposing draughts, as has the animal, yet nature does provide an element of protection, seemingly for this emergency.

This is the sebaceous material consisting of fatty matter, epithelial cells, and other detritus found in greater or less quantity on the skin of the newborn child. This, if allowed, owing to the presence of the fatty matter, would naturally protect the infant from the chilling influences of reduced temperature to a considerable degree, and of itself become exfoliated about the time the umbilical cord separates.

However, the average nurse is imbued with the idea that, as soon as her other duties are over, the infant must be immediately washed, and turns her attention towards depriving it of this protecting element, by the application of soap and water.

Personally, I do not so much object to the washing of an infant directly after birth, as the manner in which it is commonly performed.

I trust I may be pardoned for occupying your time in rehearsing this part of the infant's toilet, as it is commonly done, and with which you all must be familiar, but I wish it contrasted with the method I shall hereafter recommend.

The baby, uncovered from head to foot, lies in the nurse's lap; she takes a soft sponge or rag, and with soap of a varying degree of alkalinity, and water of more or less warmth, washes small areas of the child at a time, and dries it with a towel or cloth of a greater or less degree of softness, until all stains and sebaceous matter are removed.

By the time this process is accomplished, and especially in cold months, the child may be seen shivering, and a bluish cast appearing over the exposed surface of its body.

Then the navel is hurriedly dressed, the infant attired in more or less suitable robes, and placed in bed with its mother to get warm.

Such is the treatment of a large per cent. of the children of to-day, and such are the cases that, *almost invariably*, develop catarrhal conditions varying in severity from simple snuffles to bronchopneumonia, with all its attending dangers.

I will not weary you with statistical references to cases of bronchitis, and other catarrhal affections, traceable to the first bath of infancy as a cause, as you all, doubtless, have had large experience in that line.

The question, then, is one of true infant hygiene. Should a newborn child be deprived of its natural protecting element? If so, what method should be employed to lessen the danger to the infant's health during the process?

If some little skirt with sleeves and hood could be contrived, made of some warm, unirritating material, such as canton flannel, in which the infant, after being quickly oiled with pure hog's lard, could be wrapped and allowed to remain four or five days, until it had become accustomed to the reduced temperature, and then properly washed, it would doubtless be a less exposing method of treatment.

This, however, will not suit the average mother, who wants her infant sweet and clean, and attired in all the paraphernalia of its wardrobe immediately after birth, so that it may be shown to the interested friends of the family.

This being an inevitable fact, it remains for us to devise some method of washing infants with the least exposure to cold, and for this *reason*, I have for some time suggested the following plan of treatment:

When there exists a large amount of sebaceous matter, ordinary soap and water will not remove it, so in these cases I direct the child to be previously anointed with pure hog's lard, this being the best solvent of the white sebum.

Then the child is quickly returned to the temperature from which it originally came by immersing it, to its neck, in a tub of water, the temperature of which is 103° Fahrenheit, or thereabouts.

Then the child, supported on the arm of the nurse, is with her other hand, or by the aid of an assistant, washed underneath the surface of the water, using only a soft linen rag or old handkerchief, the hem of which has been removed, and the best Castile soap.

Although not absolutely necessary, it is better, if possible, to have a second tub of water, equal in temperature to the first, in which the child may be rinsed.

This being accomplished, which should not have occupied more than five or six minutes, the child is quickly placed in a warmed absorbing blanket, and with the hand on the outside of the garment thoroughly but gently rubbed.

Afterwards the baby should be removed and rolled in a second warm and dry blanket, and allowed to remain a couple of hours, after which it may be dressed in garments suitable for comfort and protection.

I have never seen an infant, who has been treated in this manner, contract catarrhal troubles from an early bath, or have aught but healthy looking skins.

Greater care should be employed with children of unhealthy parentage, not only in the manner of bathing, but also other hygienic surroundings, and I firmly believe we can, by a little judicious early management, prevent a large per cent. of infant mortality.

ECZEMA INFANTILE.

Read before the Section of Diseases of Children, at the forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY B. MERRILL RICKETTS, M.D.,
OF CINCINNATI, O.

I believe that the subject "Eczema Infantile" will be of greater interest to this Section than any of the cutaneous diseases met during the first five years of childhood. It is a very common disease and one for which the general practitioner is frequently consulted. Not, however, until many of the numerous household remedies have proven themselves of no avail.

I do not care, on this occasion, to discuss the pathology or the cause from a bacteriological stand point. Neither do I care to report any special case or class of cases; only to speak of the eczema of childhood and its treatment, that we may discuss the management which has been the simplest, most easily applied with the best results, thus far obtained by the author. There is not any skin disease that is so aggravating to childhood. There are none more unsightly. Usually both the head and face are involved. There are a few, where the disease is pretty generally distributed over the entire body and extremities.

When this is so, the child presents a most pitiful spectacle. The itching and discomfort occasioned by this condition are very aggravating and are sometimes accompanied by the most severe convulsive movements. There is *nothing that appeals* to a man's sympathy so much as one of these unfortunate conditions. I have seen those in charge of these unfortunate children, utterly oblivious to the suffering that the child endures.

The causes seem many, but to my mind there is none so common as that of the excessive use of soap and water.

My experience has been that about 95 per cent. of these cases are due to this cause. The disease is not a respecter of persons, as it attacks the high and the low, the rich and the poor, and above all, the white skin races. The number of cases of this disease found among the dark skin races is proportionately very small. This perhaps, may be accounted for from the simple reason that the white skin is more delicate and easily soiled; hence the use of numerous cosmetics, which are so useless and injurious, and which are so extensively used. A clean faced child is the pride of every mother. She is lavish in the use of anything that will keep her child's face clean, usually the remedy that will remove the dirt the quickest. She uses these remedies more frequently with the thin, delicate skin of the child, than she does on the skin of her own face. The sebaceous glands should not exist if this law of extreme cleanliness holds good.

Nature is not responsible for children being reared in dirty atmospheres. These glands are for a purpose, namely to keep the skin constantly anointed with a fluid which protects the epithelium from becoming dry and fissured. That portion of the body which constantly should be anointed, is the one which is necessarily exposed to the wind, the rain, rays of the sun and dusts of various character, namely: the face and hands, which are forever exposed.

As the slime protects the epithelial structures of fish and mollusks, so does the sebaceous matter protect the cuticle of man. Birds anoint their feathers that they may be kept soft and pliable. Animals covered with hair, are likewise anointed by these glands, even the hairs themselves being supplied by oily secretion. The skin of the Mexican dog is rough, scaly and disagreeable to the touch. Not so with that of the hairy canine; his is oily and being so, enables him to endure more exposures to either the sun or rain, than his tropical ally. If we would but reflect, the cause of the disease, as a rule, could easily be determined, because having once been determined, the remedy is soon to be found. *Not until* mothers receive a certain degree of education in sanitary matters, can we expect a lessening in the number of these cases. At times the cause seems to be due to some nervous condition, while at other times there is indication that it is wholly local. The vesicular form, which is the most common, especially in infants, is obstinate and very trying to both the mother and child. After the disease *has manifested itself*, the child will begin to be irritable, restless, have loss of weight and a depressed appearance in general. It may have diarrhœa or it may be constipated, or they may alternate each other. The skin is reddened in places, resembling erysipelas, with a laceration here and there, showing where the nails of the child have been brought into requisition to relieve the intense itching. Crusts may extend over the face, head and shoulders or the entire body. The temperature is usually from one-half to a degree above normal. The hair is matted together with a pustule here and there over the affected area. There are many times deep and extensive fissures, especially about the ears, nose and lips, these of themselves causing much pain and discomfort.

If the hands are involved, it is usually the backs and between the fingers that the disease is most extensive. My experience has been that the disease is more frequent during the summer months. Having satisfied myself that the use of soap and water is the cause of this disease, at least in a very large proportion, I have for several years been treating it from this stand point.

The management that I have adopted is as follows: The mother is prohibited from applying water in any form, especially soap and water. A solution of olive oil and carbolic acid in the proportion of one to fifty is applied several times during the day to the affected areas, as often as the child seems to suffer from the itching. She is instructed to use the oil lavishly and to wash the child's skin with it as though it were water. This can be easily done, removing all of the dirt, leaving the skin perfectly clean, if a silk handkerchief or old linen fabric be used. The use of tea or coffee and all stimulants is forbidden. Also all kinds of food that should not be given to children at this age.

The child is allowed to be in the sun and enjoy the out-door exercise, even though its skin should become dirty. The olive oil and carbolic acid will prevent itching, so that the child will not lacerate the skin by scratching. In this way the injured parts are allowed to become healed, while the oil softens the crusts and keeps them from being reformed. $\frac{1}{20}$ grain of calomel is given every two hours; this I usually continue for one or two months, varying in frequency as occasion may require. If, after the third or fourth day, the child does not improve rapidly, I use salicylic acid in the form of an ointment, 10 grs. to the ounce. This is applied frequently to to the diseased parts, and is I think, one of the most satifactory applications that can be made. I believe that I have used about all of the preparations that have been mentioned for this disease, but I have found none that gives greater satisfaction.

Usually I do not see such patients more than three or four times, as the recovery will be as rapid without as with me, if the mother is faithful in carrying out all instructions. I do not know in what way the calomel acts; I give it whether there is constipation or diarrhœa. Sometimes there will be from eight to a dozen stools each day; I do not pay any attention to this condition of the bowels unless the discharges give mercurial indication. If they do, I then discontinue its use until the stools become less in frequency and when they are again indicated. I was formally led to believe that the disease was occasioned by some alimentary disturbance, but I do not now so believe it to be. I do not believe that the benefit derived from the mercury is due to its action upon the alimentary tract. I do, however, to its action upon the system in general, perhaps in changing secretions which are acids to alkali. The serum exuded from these eczematous patches turns litmus paper red, at least this has been my experience. I think that the successful management of these cases rests in changing the secretion to neutral as I have had many cases make a rapid recovery by the administration of the calomel with the application of simple oil.

A NEW APPLIANCE FOR FRACTURED CLAVICLE.

Read before the Meeting of the National Association of Railway Surgeons, May 25, 1892.

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I present to you a new appliance to be used as a retentive apparatus in fracture of the clavicle.

Let me modestly state among my first assertions that the appliance probably is not the most valuable contribution that has been made to surgery in the past few years, but its efficiency, neatness, rapidity of application, comfort to the patient, and small cost to the surgeon, commends it in my judgment, formed after using it several years, as superior to any dressing generally known to the profession.

In my remarks I shall premise that a fracture of the clavicle has occurred, has been properly diagnosed, properly reduced, and that we seek the most perfect apparatus for retention.

This paper then will not be an essay upon one of the most frequent fractures of the body, it will not be a treatise upon the clavicle or scapula, or their muscular attachments. I accept the dictum of the majority of surgical writers that the object of a dressing should be to carry the shoulder joint upward and outward and backward.

Premising then that a correct diagnosis has been made, that we seek a dressing that can perform what surgeons have required, I shall ask you to look over with me some of the common appliances and methods, and note the objections that may justly be urged against them, and which in a great measure are obviated by the newer apparatus.

The objection to lying on the back is, that it is a most wearisome and tedious method to which no busy man or woman will submit if they have ever once heard of a method less confining.

Velpeau's dressing remains nicely in place—in a wood-cut only. True, men skilled in the use of silicate or gypsum, may make it a fairly stable and comfortable dressing, but the great majority of men who are called to dress fractures of the clavicle are not skilled in the use of silicate of sodium or gypsum. Ask any expert in the manipulation of plaster of Paris if my statement is not correct. Further, it cannot carry the shoulder upward and retain it there with the ease and comfort of the new dressing.

The objections to the figure of 8 bandage across the shoulders are, that it carries the shoulder backward only, not upward, not outward, that the sound shoulder, which is the point of fixation, is not fixed, but is decidedly mobile, that to be of value it must be taut—and if tight it is almost unendurable.

The shawl as proposed by Dr. Moore of Rochester, has nearly the same objections, and has an additional one that on account of the space occupied by the shawl, the patient must go about the streets dressed in a great-coat.

The axillary pad, used by Bartlett, Fox, Hamilton and others, if used as a fulcrum endangers the brachial artery and nerves—if not used as a fulcrum is better replaced by a pledget of antiseptic absorbent cotton.

Hamilton, after calling attention to the apparatus of Fox, and those similar to it, and after adopting it as a model, declares that notwithstanding the improvements he has added "it is impossible to carry the shoulder out" and almost impossible to carry the shoulder back, and I will add that I cannot understand how it is possible to carry the shoulder well upward and retain it comfortably in that position, either by Fox's apparatus or by Hamilton's modification of it.

The principles and practice of Sayre's dressing are accepted by a large number of surgeons; the majority of surgical works give it an illustration, but it is a sticky, uncleanly, annoying dressing. Further, the weight of the arm and shoulder must be borne wholly upon the olecranon process, or to avoid this, a slit is cut in the adhesive dressing and the weight transferred in great part to the sharp edges surrounding the slit.

Be as careful as I could in dressing fractures after this method I have rarely failed to produce an inflamed elbow. This result perhaps is always the fault of the surgeon, but so long as surgeons shall be wanting in skill, to avoid this a dressing that can secure the best results of the Sayre without its annoyances, must be preferred.

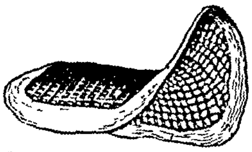


Fig. 1.

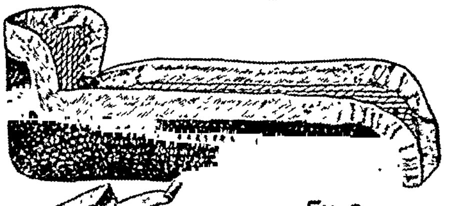


Fig. 2.

Fig. 3.

There is a method of holding the shoulder upward, outward and backward by fastening a cross above the shoulders, of which one arm of the horizontal portion extends beyond the acromion process upon the side of fracture; from the outer end of this point of the cross, a strap extends into the axilla and is used for drawing the shoulder into the ideal position.

I have crucified several persons who were so unfortunate as to have a fractured clavicle, and to entrust themselves to me during my crucifying period, and I here in humility repent. I will crucify no more.

The cross, as I have seen it used, is an instrument of torture. It presses upon the axillary vessels and nerves, it stagnates circulation, it produces numbness. If patiently worn long enough, I believe its strap could tie off the arm as our fathers tied off hæmorrhoids.

The appliance I offer as a substitute for the above dressings consists of three parts, which for convenience of description I shall designate as the arm portion, Fig. 2; the shoulder shield, Fig. 1; and the clavicle depressor, Fig. 3.

The arm portion and the shoulder shield are made of wire screen, described by hardware men as one-quarter inch mesh No. 15 wire.

The clavicle depressor is made of ordinary sheet iron.

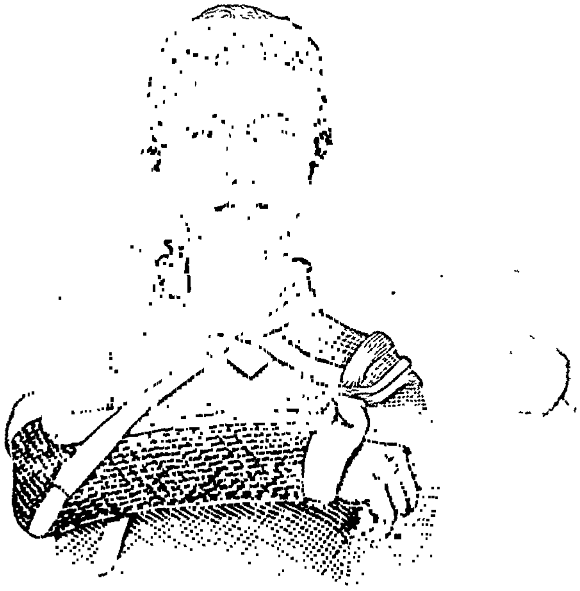
The arm portion for the average adult is made from a piece of screen about sixteen inches long and eight inches wide.

It should be so formed as to loosely encircle three-fourths of the bent arm from the wrist to a point four or five inches above the elbow.

The radial surface of the arm is not enclosed. The texture of the screen is such as to permit it to be molded quite easily into the form we desire by any ordinary tinsmith.

The arm piece should be deeply indented opposite the olecranon process and the condyles, to avoid all pressure at these points. The margins of the piece can be easily covered by ordinary rubber adhesive plaster.

A strong piece of webbing or belting or roller bandage is attached to the outside of the splint near the olecranon prominence. It should be so long that when the arm piece is applied to the arm, the webbing can pass obliquely across the back and over the opposite shoulder where it is buckled to its opposite end.



A similar piece of webbing is sewed to the distal or manual end. The arm piece is to be applied to the arm corresponding to the injured bone.

A soft [illegible] should line the arm piece. The shoulder shield is placed on the shoulder opposite to the fracture, and should be molded to its contour. A soft pad should be beneath it when in position.

The diagnosis of fracture of clavicle having been made, the arm corresponding to the injured side is cradled in the arm portion of the dressing, then the belt sewed to its olecranon end is carried through the axilla, over the scapula over the opposite shoulder, protected by its shield, and is buckled to its opposite end.

Now grasp the wire appliance at its elbow and push the shoulder upward, outward, backward, and tighten the belt until it retains the shoulder in the position where placed.

Carry the manual belt through the axilla over the shield, tighten until the hand is brought near to the shoulder, and in most cases this is all that will be necessary to do until the dressing is permanently removed and the patient discharged.

The olecranon strap will hold the shoulder upward and backward, the manual belt will, by drawing the elbow inward across the chest, make of the breast a fulcrum as safe as we can use or will need.

Indeed when the shoulder is carried upward and backward sufficiently, the fractured ends can be nicely approximated and there will be little desire of carrying the shoulder outward.

I have spoken of a clavicle depressor. In many cases it will not be necessary. In a few where it is aimed to secure the least possible deformity it will be of material advantage.

It is made of a piece of sheet iron an inch wide, and about six inches long, bent inward a little above its center sufficiently to reach over the clavicle, the upper end extending about two inches above the clavicle; this must be padded and a strip of adhesive plaster may be sewed to the padding.

To hold this in position and to depress the clavicle, I have resorted to the following device:

Sew a short strip of elastic webbing upon a strip of rubber adhesive plaster, sew a buckle to the webbing, hold the buckle opposite the clavicle, draw the plaster and webbing vertically downward directly over the depressor, stick the plaster to the skin of the chest. Apply a similar elastic and adhesive plaster (without the buckle) in the line of the depressor down over the scapula, buckle the two elastics over the depressor.

The amount of force necessary to depress the clavicle can be regulated as desired.

In presenting this appliance for your consideration, I desire to direct attention to what I regard as its chief merits.

By its use the ordinary adult shoulder can be carried upward and *retained permanently* and *comfortably* at an elevation of from one and one-half to two and one-half inches above its ordinary position.

Elevating the arm when the elbow is carried forward and inward carries the shoulder backward and slightly outward.

The posterior portion of the olecranon strap, in its course from the elbow to the opposite shoulder, passes over and binds down the scapula of the injured side. This is regarded as important by many surgeons.

The heavy wire indented as directed above, removes all pressure from the olecranon and condyles, and transfers it to a part where it is easily borne.

The belt carried from the base of the neck to the opposite shoulder is nearly vertical, and more certainly assures an upward lifting of the arm and shoulder than the Sayre appliance, which, lifting from the point of the shoulder, exerts its force more obliquely and therefore less efficiently.

The shoulder shield protects the tissues of the neck and shoulder from injurious or uncomfortable pressure.

A single arm piece and shield is suitable for a wide range in size of arms and shoulders. The form is easily changed.

There is no pressure upon the nerves and vessels of the axilla. The dressing is applied almost in a moment, and will not get misplaced. It is cleanly.

It is cheap. An arm piece, shield and depressor, without webbing and without the adhesive plaster on edges, should be furnished by the tinsmith at a cost not to exceed *fifty* cents.

SCARLET FEVER WITH NEPHRITIS IN PREGNANCY.

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Scarlet fever occurring in the pregnant woman seems to be a pathological rarity which is accorded but scant space in every treatise which the writer of this paper has had opportunity to examine.

While the parturient woman is said to be very susceptible to infection during epidemics of scarlet fever, but very few cases of this disease occurring during the period of gestation are recorded.

The belief of the older obstetricians that pregnant women possessed immunity in a certain degree from acute infectious diseases having been abandoned by most writers of the present day, and thus establishing the rule that women during gestation are as liable to attacks of scarlet fever as at any other period of adult life, we are somewhat at a loss to account for the exceedingly small number of recorded cases.

Cazeaux never saw a case.

The American System of Obstetrics tells us that Olshausen collected 7 cases. Pregnancy was interrupted in four of these. In certain cases the disease was transmitted to the fœtus.

Quoting from the Cyclopedia of Obstetrics we find that scarlet fever appears to be the exception during pregnancy. When occurring it assumes a grave, *malignant* type, and terminates in abortion in the case of *every* woman, in *death* in the *majority.*

Austin Flint speaks of a case where the patient contracted the disease in the seventh month of pregnancy. Miscarriage occurred during the period of *incubation.* Parenchymatous nephritis occurred as a complication, and although the symptoms denoted great danger, the patient recovered and the child lived.

Parvin, in the Handbook of Medical Science says: "Scarlet fever is rarely observed in pregnancy and when it does occur is liable to interrupt its further progress, and is peculiarly fatal."

Jaggard in an article on "Acute Infectious Diseases in Pregnancy," says they are of the gravest clinical importance. Have a marked tendency to cause abortion with great peril to the mothers. Hæmorrhagic endometritis during infectious diseases is not uncommon in the non-gravid state and is more common in the pregnant condition."

He further says that during the progress of infectious diseases, death of the fœtus and consequent abortion may be caused.

First.—By the elevation of the maternal temperature which produces a disproportionate rise in the temperature of the unborn child. As one author says, "it dies of heat-stroke."

Second.—It may die from asphyxia caused by lowering of the maternal blood pressure, or by structural changes in the epithelium covering the fœtal placenta due to the condition of the maternal blood.

Third.—It may perish in consequence of infection with the specific poison of the disease, and

Fourth.—It may be expelled on account of thermic irritation of the uterine muscular fibre.

Bearing these causes in mind and referring to the case reported by Flint the question arises as to what caused the miscarriage to occur during the period of incubation.

Spiegelberg says, "The eruptive fevers usually occur early in pregnancy, but the tendency to malignant forms with fatal results increases as pregnancy advances."

The experience which prompted the writing of this paper began on February 28, of the present year.

Mrs. C., æt. 25, in the latter part of the sixth month of her second pregnancy, had been suffering for 24 hours with tonsillitis which was epidemic at that time. Vomiting and diarrhœa had occurred, but were attributed to the fact of pregnancy. On the day before mentioned a brilliant, thick set scarlet rash was discovered which soon covered almost the entire body. Having heard it said during our college days that young doctors were famous for finding cases of rare diseases, an older practitioner, Dr. E. C. Miller, of Rockwell, was sent for, who unhesitatingly agreed in the diagnosis of scarlet fever, a malignant form of this disease being in the locality. The angina became very painful, and the rash was as typical as any the writer has ever seen. The temperature, however, never rose above 101½° F. at any period of observation. In the course of five or six days the rash disappeared, although the soreness and swelling of the throat persisted a few days longer. No other complications occurred up to this time, and not a particle of desquamation was discoverable at any time. The patient gradually returned to her apparent usual health and was soon up and about the house.

On returning home from a protracted country trip at 2 A.M., on March 15, the patient was found very sick with all the symptoms of acute nephritis. Chill, fever, pain in the back, aching of the body, feet and legs much swollen, and face so bloated as to be almost unrecognizable. Tongue broad, pale, flabby and covered with a white, pasty coat. Pulse 120. Urine nearly suppressed, dark brown in color, with a sooty deposit. Not over eight ounces was passed in the first 24 hours. Sp. gr. 1012, considerable albumen. By the third day urine was a clear blood red, slightly increased in quantity, sp. gr. same as before. Headache, with irritability, and dulness of mind, and dimness of vision now appeared as part of the clinical picture. This condition, with slight increase in amount of urinary discharge, sp. gr. varying from 1010 to 1012, color blood red, but growing paler, amount of albumen about as at first, persisted for ten days.

At this time patient began to improve in all respects and at last examination of urine on April 10, the quantity was normal, color natural and no albumen. Nearly every trace of swelling had disappeared. Tongue was red, full and round. No coating. There was a considerable diminution in body weight, also in size and firmness of muscular structures. A certain amount of dyspnœa, of which the patient had complained for some time prior to the attack of scarlet fever was now gone, and she said she had not felt in better health for years.

The treatment during the scarlet fever was of the usual kind. Diet of milk and beef juice.

During the nephritis, tinc. of iron, tinc. digitalis, potass. acet, saline cathartics, tonic doses of quinia and strychnia, and lactopeptine were administered. A few doses of morphia, bromides and chloral were given to quiet pain and restlessness.

During the first twelve days the diet was *exclusively milk.*

No symptoms of convulsions or abortion appeared.

During the interval between the fever and the onset of the nephritis the patient resumed her usual diet, and here a mistake was made, as the milk diet should have been continued until danger of kidney complications was past. The patient also should not have been allowed to expose herself to varying temperatures as she did. Urinary examinations should have been made and thus have anticipated in some degree the possible violent nephritic attack.

On June 8, the patient was normally delivered of an 8½ pound boy. Return to health has been rapid and satisfactory.

Among various queries which have arisen in the mind of the writer regarding this case, are the following: To what extent did the medicinal treatment contribute to the favorable termination of the nephritis; and, is the child subject to future scarlatinous infection?

PURULENT BRAIN DEPOSITS, AND PHLEBITIS AND THROMBOSIS OF THE CEREBRAL VEINS AND SINUSES FOLLOWING EAR DISEASE.

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(Concluded from page 728.)

The pus may be found outside of the dura-mater, and search should be made for it in this location. If found, and the dura appears to be thoroughly healthy, with no bulging or fluctuation, the operation may cease, and future developments awaited. But if pus is *not* found outside of the dura, or when found in this situation the dura appears unhealthy, or bulges or fluctuates, a free incision through it should be made, and the brain itself exposed. Pus may be found just inside the dura. If this proves to be the case, and the brain substance appears healthy, and is not bulging or fluctuating, operations may be suspended; but if pus is not found, or, if found, and the conditions just mentioned are present, and the operator is reasonably sure of his diagnosis, investigations must be pushed into the brain proper.

For exploring the brain, the aspirator, or exploring needle is to be preferred to the knife, and it should be introduced, and re-introduced, again and again, rather than to shove it along, from place to place, in hopes of finding pus. When the abscess is reached, the knife may be used to freely lay it open, at its most dependent portion. This cavity should not be syringed, a thorough opening, and good drainage being sufficient. A few strands of gut, should be placed into the abscess, as far as can be reached, and the end allowed to hang outside of the head. This can be shortened from day to day.

The dura-mater, and skin flaps, may be sutured at their upper portions, but enough space at the bottom allowed to remain open, to admit of good drainage.

Gut sutures should be employed for uniting the dura-mater, and iodoform dressings should be employed. Lanphear recommends that the head should be kept low after the operation, and it is needless to say that the strictest antiseptic precautions should be maintained.

In case it becomes necessary to attack the cerebellum, the same directions are applicable, and the only question is to ascertain the best point for trephining. The opening should be made in the cerebellar fossa. This disease does not usually occur sporadically in the cerebellum, but spreads backwards, *to* the cerebellum from the usual focus of disease, viz.: the petrous and mastoid portions of the temporal bone, in consequence of which the abscess will generally be found in the anterior portion of the cerebellum. We must get at this portion of the brain, to do which the opening must be made one and a half inches back of the middle of the osseous meatus, and one-quarter of an inch below it. The opening, in other words, should be just back of the posterior border of the mastoid process. The lateral sinus would not be touched at this point, and the exploring needle should be directed upward, forward, and inward, to reach pus in the anterior portion of the lateral cerebellar lobe.

Before passing on to a consideration of phlebitis and thrombosis, I beg leave to submit the following tables, compiled from a study of the foregoing cases.

We first have a complete list of the symptoms and conditions occurring in the histories recorded in this article, and the frequency of their occurrence. They are as follows:

Deafness	11	Temperature high	8
Tinnitus aurium	3	Temperature medium	42
Tympanic necrosis	6	Temperature sub-normal	2
Tympanic granulations	6	Pulse high	6
Tympanic polypus	7	Pulse medium	33
Ear pain	35	Pulse sub-normal	2
Cholesteatoma	3	Sudden rise and fall of temp.	2
Swelling in front of ear	3	Chills	38
Swelling over ear	4	Facial paresis or paralysis	28
Swelling under ear	4	Paresis or paralysis, limbs	19
Mastoid swelled and tender	35	Spasms of limbs	7
Mastoid opened, spontaneously or otherwise	31	Spasms of facial muscle	4
		Paralysis of auditory nerve	2
Pus found in mastoid after opening	16	Suspended breathing	1
		Incontinence of urine	3
Pus *not* found in mastoid after opening	7	Facial veins enlarged	2
		Optic neuritis	11
Spontaneous mastoid opening	5	Amblyopia	5
		Amaurosis	1
Wilde's incision made	9	Syncope	2
Opening into cranium made either spontaneously or otherwise	21	Neuralgia of trigeminus	2
		Epilepsy	4
		Head pain	78
Pus found in cranium after opening	16	Diplopia	2
		Strabismus	10
Œdema of eyelids	1	Tender spine	1
Pupils dilated	8	Epistaxis	1
Pupils contracted	8	Diarrhœa	3
Pupils sluggish	2	Constipation	11
Nystagmus	1	Pyæmia	4
Ptosis	6	Episthotonus	3
Exophthalmus	4	Meningitis	10
Delirium	36	Nausea and vomiting	41
Aphasia	8	Facial œdema	2
Stupor	18	Facial herpes	2
Unconsciousness	17	Œdema of neck	3
Coma	39	Maniacal	1
Convulsions	22	Vertigo	22
Insomnia	2	Fainting	1
Somnolence	11		

I have given this itemized record of symptoms, as they have come to me in the reports. It would seem that the histories must have been given somewhat inaccurately, as I feel confident that many of the symptoms must have been of more frequent occurrence.

For instance: head pain, ear pain, deafness, tympanic necrosis, etc., must have been present in most of the cases, and yet it is not here recorded. On the contrary, some of the symptoms noted, were so seldom seen and apparently have so little direct bearing on the case, that they can hardly be classed in the symptomotology of intra-cranial disease following aural affections.

As to the results obtained in these cases, the record is as follows: Death, 158; recovery, 11. Total, 169.

We find that in these 169 cases, the skull has been opened spontaneously or otherwise, 21 times. All the 11 recoveries here recorded are contained in these 21 cases after the skull has been trephined, and the brain exposed. This shows a recovery of more than one-half of the cases thus operated. Considering our primitive knowledge of the subject, this record is good, and should encourage us to renewed efforts in the future, especially as operative interference is our only reasonable hope for lessening the mortality.

I will now beg leave to submit an itemized report of the various post-mortem appearances found, and the frequency of their occurrence. They are as follows:

Pus in the dura-mater	1
Pus in the pia-mater	7
Pus in the arachnoid	1
Pus in the superior petrosal sinus	2
Pus in the lateral sinus	5
Pus in the jugular sinus	2
Pus in the sigmoid sinus	3
Pus in the inferior cavernous sinus	2
Pus in the internal jugular vein	1
Pus in the lateral ventricle	4
Pus in the posterior occipital fossa	1
Pus in the middle cranial fossa	1
Pus in the 1st frontal fissure	1
Pus in the fissure of Rolando	1
Pus in the neck	2
Pus around chiasm	1
Pus over temporal lobe	1
Pus over medulla	4
Pus over pons	2
Pus between mastoid and dura-mater	1
Pus around spinal cord	1
Pus on surface of cerebellum	2
Pus between dura-mater and tegmen-tympani	3
Pus generally distributed over side of hemisphere	15
Pus on opposite side of brain to point of lesion	1
Pus in mastoid cells	15
Pus in labyrinth	1
Pus in cochlea	2
Pus in Fallopian canal	1
Pus in Eustachian tube	1
Pus in tensor tympanic canal	1
Pus patches over brain	2
Pus at base of brain	2
Pus at sella turcica	1
Pus on outer surface of frontal convolution	4
Purulent meningitis	11
Purulent bas. meningitis	3
Purulent lepto-meningitis	3
Purulent infiltration of orbit	1
Pus in semi-circular canals	3
Pus in tympanum	22
Pus in vestibule	4
Pus in internal ear	2
Pus in mastoid antrum	5
Pus on outer mastoid surface	2
Pus on outer squamous surface	1
Pus on outer sup. max. surface	1
Abscess in temporal lobe	40
Abscess in middle lobe	7
Abscess in occipital lobe	1
Abscess in frontal lobe	2
Abscess in cerebellar lobe	31
Abscess in pons	3
Abscess in crus cerebelli	1
Abscess in middle cranial fossa	1
Abscess in post. cranial fossa	2
Abscess in 1st frontal convolution	1

Abscess at apex of petrous	1
Abscess beneath dura-mater on outer surface of petrous	3
Diffuse sub-dural abscess	5
Abscess encapsulated	9
Abscess not encapsulated	2
Necrosis of upper part of petrous	10
Necrosis of inner surface of squamous	3
Necrosis of inner table of skull (general)	1
Necrosis of outer surface of mastoid	6
Necrosis of outer sarface of occip.	1
Necrosis of outer surface of sup. max	1
Necrosis of outer surface of frontal	1
Necrosis of outer surface of squamous	3
Necrosis of outer surface of parietal	2
Necrosis of inner surface of mastoid	5
Necrosis of mastoid antrum	6
Necrosis of mastoid cells	11
Necrosis of tympanum	21
Necrosis of tegmen-tympani	16
Necrosis of malleus	1
Necrosis of incus	1
Necrosis of meatus ex.	8
Necrosis of cribriform lamina.	1
Necrosis of jugular fossa	1
Necrosis of cochlea	1
Necrosis of vestibule	1
Necrosis of semi-circular canals.	3
Necrosis of pyramid	1
Necrosis of lateral sinus	5
Necrosis of bony wall of facial canal	1
Necrosis of vertebræ	2
Necrosis of sulcus for lateral sinus	2
Necrosis of bony wall of carotid canal	2
Necrotic opening through roof of mastoid antrum	2
Necrotic opening through squamous	1
Necrotic opening in bony wall of sulcus trans.	1
Necrotic opening in incis. santorini	1
Necrotic opening in sup. pet. sinus	1
Necrotic opening in wall of lateral sinus	2
Necrotic opening in parieto-occip. suture into cranial cavity	1
Necrotic opening in semi-circular canals	2
Necrotic opening in sigmoid flexure.	1
Necrotic opening in posterior wall of meatus	1
Necrotic opening between middle and internal ears.	2
Necrotic opening between internal ear and cranial cavity	2
Necrotic opening between mastoid antrum and sup. pet. sinus	1
Necrotic opening between mastoid antrum and sigmoid sinus	2
Necrotic opening in tegmen-tympani.	13
Necrotic opening through anterior surface of petrous.	1
Necrotic opening through lower tip of mastoid	1
Necrotic opening through inner mastoid plate to lat. sinus	5
Necrotic opening through outer mastoid plate.	1
Necrotic opening through inner mastoid plate.	1
Thrombosis in long. sinus.	8
Thrombosis in superior petrosal sinus.	9
Thrombosis in inf. petrosal sinus	2
Thrombosis in sigmoid sinus	1
Thrombosis in lateral sinus	8
Thrombosis in transverse sinus	8
Thrombosis in cavernous sinus	3
Thrombosis in carotid sinus	2
Thrombosis in sub. clav. vein	1
Thrombosis in internal jugular vein	9
Thrombosis in basilar vein	1
Thrombosis in ophthalmic vein	1
Thrombosis in bulb. ven. jug	1
Thrombosis in sigmoid flex	1
Thrombosis in circular sinus of Ridley	1
Phlebitis of lateral sinus	4
Phlebitis of trans. sinus	4
Phlebitis of superior petrosal sinus	1
Phlebits of ex. jug. vein	3
Phlebitis of mastoid em. vein	1
Phlebitis of ophthalmic veins	1
Dura-mater inflamed	11
Dura-mater perforated	8
Dura-mater adherent to bone	6
Arachnoid inflamed.	2
Pia-mater inflamed	12
Pachymeningitis	1
Bas. meningitis	7
Tuberc. meningitis	3
Meningitis	14
Lepto-meningitis	1
Brain membranes adherent to each other	3
Congestion of all meningeal veins.	1
Hernia of temporal lobe.	1
Gangrene of brain	2
Ossicles gone (all)	7
Malleous gone	6
Incus gone	8
Stapes gone	5
Drum-head gone	12
Drum-head perforated	3
Drum-head not perforated	1
Polypus in tympanum.	6
Cholesteatoma in tympanum.	4
Epithelioma in tympanum	1
Granulations in tympanum	3
Facial nerve destroyed	5
Facial nerve exposed and imbedded in pus	3
Auditory nerve exposed and imbedded in pus	1
Cholesteatoma of mastoid antrum	2
Granulations of mastoid antrum	2
Cholesteatoma of mastoid cells.	2
Mastoid cells sclerosed	5
Mastoid cells obliterated	3
Auricular glands enlarged	1
Sigmoid sinus obliterated	1
Bulb. portion of jug. vein obliterated	1
Mastoid em. vein obliterated	1
Chorda tymp. nerve obliterated	2
Trigeminus nerve obliterated	1
Atrophy of op. nerve	2
Frontal lobe œdematous and soft	1
Adhesions between brain and skull	4
Polypus of external meatus	1
Rupture of sigmoid sinus	1

Having now considered the subject of purulent accumulations within the cranial walls, resulting from otorrhœa, we will turn our attention to "Phlebitis and thrombosis of the cerebral veins and sinuses, caused by otorrhœa."

The two subjects of phlebitis and thrombosis may be considered under one head, as the symptoms and conditions are identical, excepting that the evidences of disease are more marked and decided in thrombosis than in phlebitis. The principal sinuses and veins affected are the lateral, cavernous, superior longitudinal, and superior and inferior petrosal sinuses, and the mastoid emissary and facial veins. The parts drained by these sinuses and veins show with tolerable distinctness the seat of the trouble. I will itemize the special local symptoms that follow phlebitis and thrombosis of each of these sinuses and veins.

If the lateral sinus is affected we will be apt to notice tenderness, œdema, and a corded feeling along the course of the internal juglar vein in its course towards the clavicle. Sometimes purulent degeneration of these parts wil be seen, while œdema of the parts in and about the external ear, dizziness, and staggering, may be expected.

By union of the two lateral sinuses at the internal occipital protuberance, the difficulty may extend from one sinus to the other, and thereby produce at the opposite side, the same condition existing at the original site of disease.

If the cavernous sinus is affected, we may anticipate œdema of the retina, poor vision, photophobia, œdema around the eye, and in the orbit; œdema of nostrils, forehead, eyelids, and nasal mucus membrane, epistaxis, perhaps exophthalmus, ptosis, sloughing of orbital tissue, paresis or paralysis of the abducens, oculo-motor and trigeminus nerves.

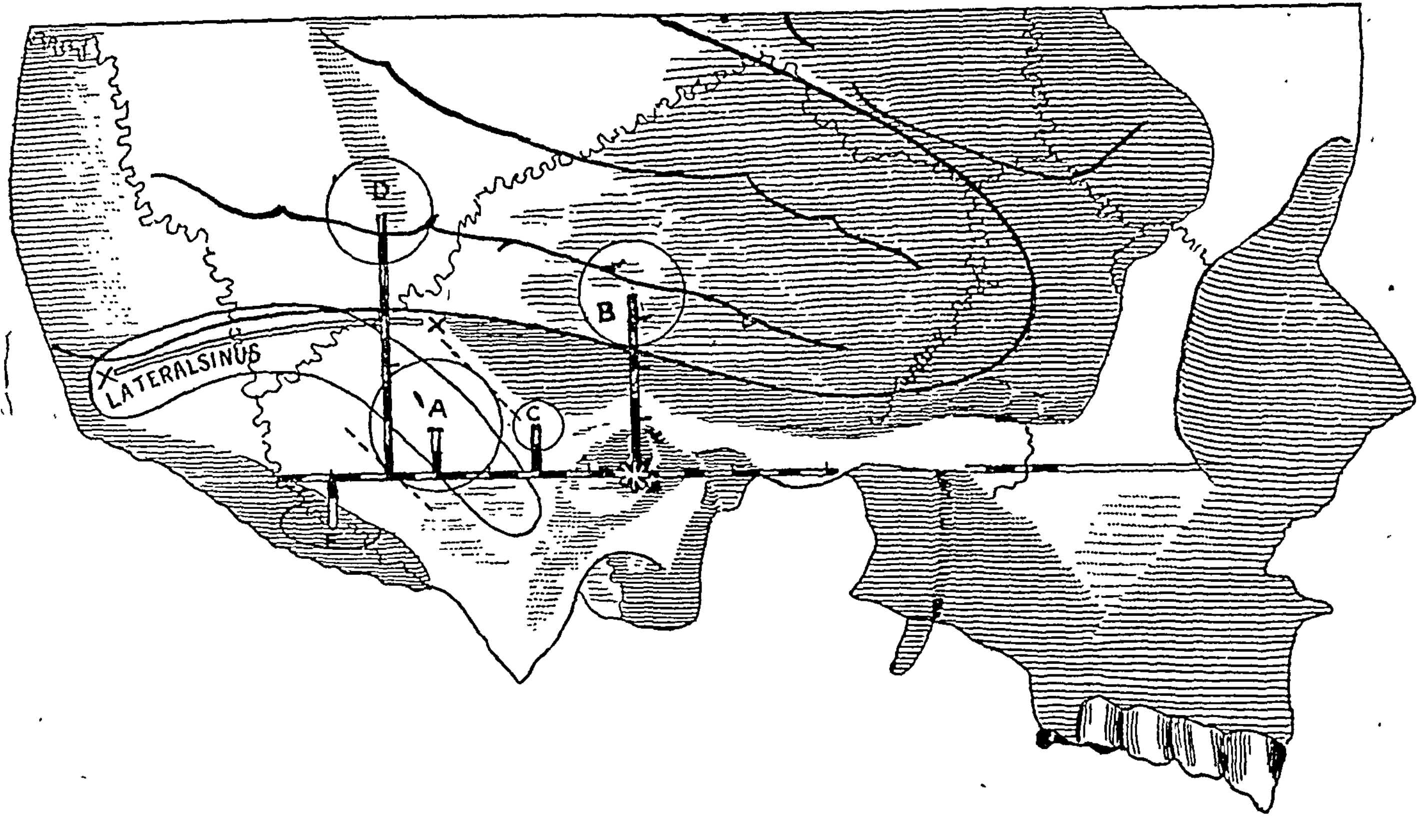
If the superior longitudinal sinus be affected, we may look for epistaxis, epilepsy, convulsions, and vascular engorgement in the cortical substance of the cerebrum, producing unconsciousness.

If the superior or inferior petrosal sinuses be affected, we may expect epistaxis, swelling of veins extending from the anterior fontanelle to the temples, epilepsy, engorgement of orbital vessels, poor vision, photophobia, paresis or paralysis of oculomotor and abducens nerves, exophthalmus, ptosis, œdema of eye-lids, and sloughing of orbital tissues.

If the mastoid emissary vein be affected, we will usually notice induration of the neck and suppuration of the induration, œdema around mastoid process, tenderness over exit of mastoid emissary and jugular veins, suppuration over the former, œdema of eye-lids, purpuric spots on face and upper part of chest (this is usually one of the latest symptoms) general head pain, vomiting, coma, convulsions, facial erysipelas, dyspnœa and delirium.

If the facial vein is affected, we expect œdema of face, erysipelatous swelling of cheeks and eye-lids, and possibly vesicles on face.

It will be noticed that some of the symptoms here given, are the same, when different vessels are involved, this being due to the connection existing from one vessel to the other, and in consequence the almost necessary implication of more than one portion of the venous circulation at a time. A correct idea as to the original seat of disease, must be estimated by a review of the different conditions, with a careful elimination of the less predominating symptoms.



LATERAL ASPECT OF A SMALL ADULT SKULL. NATURAL SIZE. (FROM BALLANCE.)

The illustration shows the relations of the lateral sinus to the outer wall of the cranial cavity, and the position of the trephine opening (A) which should be made when it is deemed necessary to expose it. The base line (Reid's) passes through the middle of the external auditory meatus and touches the lower margin of the orbit. It is marked out in eighths of an inch, as are also the perpendicular lines drawn from it. The measurements are made along the base line from the middle of the bony meatus. The drawing also shows the convolutions of the temporo-sphenoidal lobe, the Sylvian fissure, and the position of the lower end of the furrow of Rolando. XX indicates the site of the tentorium as far as it is in relation to the external boundary of the skull. The anterior X shows the point where the tentorium leaves the side of the skull, and is attached to the superior border of the petrous bone. A, trephine opening to expose sinus, ⅝ inch in diameter, its center being 1 inch behind and ¼ inch above the middle of the bony meatus. This opening can easily be enlarged upward and backward and downward and forward (see the dotted lines) by suitable angular-cutting bone forceps. It is always well to extend it forward, so as to open up the mastoid antrum (C) and the gutter of the carious bone (if there be one) which leads from the antrum, tympanum, or meatus, down to the bony groove. The position of the trephine openings which must be made for the relief of inflammatory intra-cranial affections secondary to disease of the ear other than for sinus pyæmia have been added to the drawing for the sake of contrast and completeness. They are as follows: B, trephine opening to explore the anterior surface of the petrous bone, the roof of the tympanum, and the petro-squamous fissure. ½ inch in diameter, its center being situated a short inch (⅞ inch) vertically above the middle of the meatus. At the lower margin of this trephine hole a probe can be insinuated between the dura and bone, and made to search the whole of the anterior surface of the petrous. C, trephine opening for exposing the mastoid antrum, ¼ inch in diameter, and ½ inch behind and ¼ inch above the center of the meatus; or ¼ inch above the center of the meatus and ¼ inch behind its posterior border. The trephine should be directed inward and slightly downward and forward. When a superficial disk of bone has been removed, it is well to complete the operation with the gouge. A large trephine may with advantage be employed, especially in adults. D, trephine opening for temporo-sphenoidal abscess, ½ inch in diameter. Situation recommended by Barker, 1¼ inches behind and 1¼ inches above center of meatus. The needle of the aspirator is to be directed, at first, inward and a little downward and forward. E, trephine opening for cerebellar abscess, ½ inch in diameter, and 1½ inches behind and ¼ inch below the center of the meatus. The anterior border of the trephine should just be under cover of the posterior border of the mastoid process. The drawing shows that a trephine hole made in this situation is far away from the lateral sinus, and that the trocar and canula of the aspirator, if directed forward, inward and upward, would hit an abscess occupying the anterior part of the lateral lobe of the cerebellum, which is the usual site of collections of pus in this part of the brain.

Besides these special indications of disease in the various vessels, there are some general symptoms of phlebitis and thrombosis of the cerebral sinuses and veins following otorrhœa, that must not be forgotten.

The general appearance of a patient suffering from this disease, is apt to be quite different from that of a person afflicted with purulent accumulations in the brain cavity. Of course it must not be forgotten that the two conditions may be combined in one case, in which instance, a mixture of both symptoms will be observed. The general appearance of a patient suffering from cerebral pus deposits. pure and simple, is not *active*. The disease kills insidiously; the condition is below par. The temperature and pulse are not much exalted; they may even be sub-normal. If the mental condition is disturbed, it is apt to be in a dull apathetic manner, and the entire appearance is usually one of depression and anxiety.

Phlebitis and thrombosis, on the contrary, induce a different state of affairs, and the patient appears exhilarated, and in a nervous, highly-strung condition. The temperature is never sub-normal, and is apt to be high, with occasional rapid changes from a medium to a high degree. Chills are of frequent occurrence. Violent delirium is sometimes seen, and the scarlet cheek and brilliant eye, denotes an exalted condition, and a rapid progress towards a fatal termination.

There is one symptom that I find recorded but twice in these 169 cases, where the post mortem each time revealed the same pathological condition. This symptom was a sudden rise and fall of temperature. The autopsy in both instances, showod a thrombosis in the lateral sinus, and internal jugular vein, and while not attaching too much importance to these symptoms and conditions, they should not be entirely forgotten.

I beg leave to here submit a chart with descriptive remarks, that I take the liberty of borrowing from Ballance. It is extremely simple and accurate, and will be found invaluable in elucidating the topography of the brain, skull, etc.

I have tabulated the symptoms occurring where phlebitis and thrombosis were present, and beg leave to submit them.

Head-pain	12	Optic neuritis	1
Ear-pain	2	Œdema of lids.	3
Temp. medium.	4	Diplopia	1
Temp. high.	3	Facial herpes.	1
Pulse medium	4	Facial paralysis	3
Pulse high	3	Facial veins enlarged.	1
Chills	11	Vomiting and nausea	5
Mastoid tender and swelled	5	Neck swelled and painful	6
Delirium	9	Pyæmia	3
Unconsciousness	1	Diarrhœa	1
Coma	3	Epistaxis.	1
Stupor.	1	Sudden rise and fall of temp.	2
Somnolence.	1	Exophthalmus.	3
Convulsions.	1	Œdema near ear	1
Vertigo	3	Meningitis	1
Strabismus.	2	Œdema of uvula.	1
Amblyopia	2		

I have also prepared a table showing symptoms that occur in *pure* cases of phlebitis and thrombosis, uncomplicated by any brain lesion.

These symptoms do not occur in any other class of cases under consideration:

Œdema of eye-lids
Facial veins enlarged.
Pyæmia.
Diarrhœa.
Epistaxis.
Sudden rise and fall of temp.
Œdema near ear.
Œdema of uvula.

I have also noted the symptoms found in both kinds of cases, viz.: Cerebral pus deposits, and cerebral phlebitis and thrombosis, following otorrhœa, but predominating in the latter. These are as follows:

Chills.
High Temperature.
High Pulse.
Episthotonus.

Records like these are significant, but too much reliance must not be placed upon them, as some of these symptoms may have been incidental only. We must naturally bear in mind in estimating these records, as to symptoms and post-mortem appearances, that some observers are more accurate than others in noting and recording such items, and in consequence the reports may not always be thoroughly correct. It is, however, in a large number of cases, comparatively easy to see the general drift, in favor of certain symptoms, post-mortem appearances etc. Again, many of the symptoms and post-mortem appearances are not at all significant, and hardly noteworthy. Their infrequent occurrence, and evident irrelevancy, deprive them of importance, and really make them unworthy of consideration. The principal symptoms, and the important seats of lesion, should be born in mind, but further than this we need not go.

Phlebitis and thrombosis as heretofore specified, may be caused by direct contact of necrosed bone, with the capsule of the vessel, by contiguity of tissue along the vascular walls, or by means of pus migration through the small bony foramenæ, or the various vascular supplies.

It may be well, therefore, to briefly glance at some of the essential anatomical points involved in the matter, and for this purpose I take pleasure in referring somewhat to the studies and researches of Green, Bacon and Dana.

A close relationship exists between the cerebral veins and sinuses and the focus of disease in otorrhœa. For instance, the veins of the tympanum terminate in the middle meningeal and pharyngeal veins, and pass from thence to the internal jugular vein.

The lower floor of the tympanum separates this cavity from the jugular vein, and is perforated by the glosso-pharyngeal nerve and a minute vessel.

The mastoid cells are separated from the lateral sinus, by a thin osseous wall, which is perforated by minute foramenæ. It will be remembered, that the veins of the vestibule and semi-circular canals, accompany the arteries, and receiving those of the cochlea, at the base of the modiolus, terminate in the superior petrosal sinus.

There are eight emissary veins passing through the skull, which connect the organs and tissues in the interior of the skull, with those exterior to it. It is not essential that all of these should be mentioned, but the mastoid emissary vein is by far the most important. It emerges from the skull just behind the mastoid process, and furnishes a venous connection, between the lateral sinus and the occipital veins, outside of the skull. It passes through the mastoid foramen, and connects the lateral sinus with the occipital veins, and goes from thence to the internal jugular vein. Greene asserts that, its average position is just behind the posterior limit of the *mastoid process*, about on a line with the meatus. Its position is important, because it is at this point, that we may first notice the swelling, pain and tenderness that indicates an involvement of the lateral sinus. The condyloid emissary vein passes through the condyloid canal, and connects the plexus verteb. cervical., with the lower end of the lateral sinus. The parietal emissary vein passes through the parietal foramen, connecting the veins of the scalp, with the superior sagittal sinus. The occipital emissary vein, passes through an opening in the occipital protuberance, and connects the occipital veins with the sinus near the torcular herophili.

It should also be remembered, that the vascular supply of the scalp, skull, and dura-mater comes from the external carotid, while the vascular supply of the eye, brain, and pia-mater, comes from the internal carotid and vertebral veins.

My records show that the longitudinal, superior petrosal, lateral and transverse sinuses, and internal jugular vein, are affected by phlebitis and thrombosis, with about equal frequency, and that these sinuses and veins are more frequently affected than any others.

From these statistics it does not appear that the lateral is more frequently affected than the other sinuses, as is generally believed. Indeed, the superior petrosal sinus was found thrombotic once more than the lateral sinus, which would lead us to infer that this disease is somewhat more inclined to spread from the middle and internal ears, than from the mastoid cells.

The frequency of involvement of the internal jugular vein, is accounted for by the easy transmission of disease from the middle and internal ear by three channels. One by the tegmen-tympani, another by a small vein passing from the middle ear into the middle meningeal vein, and thence to the internal jugular vein, with still another means of communication by the veins before mentioned passing from the internal ear, into the superior petrosal sinus, into the lateral sinus, and into the internal jugular vein.

The venous connection between the mastoid cells, and lateral sinus; which in its turn empties into the internal jugular vein, must not be forgotten in this particular, and we therefore infer it to be but natural that the internal jugular vein should be frequently affected, as it is the dumping ground of so many venous channels.

These cases run a variable course, extending from a few hours to several weeks, but the result is usually fatal, although instances of recovery are not rare. I myself have seen several cases, of undoubted phlebitis and thrombosis, of a most severe character, where complete and permanent recoveries have occurred.

Postmortem examinations have produced frequent cases of brain thrombi, where such a condition was not suspected during life. The explanation of this phenomenon is probably the vicarious action of the rich collateral circulation. Barr reports a case where the autopsy showed complete occlusion of the lateral sinus, by fibrous bands.

Death usually takes place from metastasis, especially by embolic pleura-pneumonia, less frequently by abscess of the liver and kidney, sometimes from pyæmia. We may be sure of a fatal issue, when thrombus of the internal jugular vein is found, with metastasis of the internal organs.

We have gathered that phlebitis and thrombosis of the cerebral sinuses and veins from otorrhœa is not so fatal in its character, as cerebral abscesses, etc., from the same cause, and consequently the indications for operation, are not so imperative. We can often afford to temporize somewhat with it, treat the indications and wait for developments and active indications, before resorting to operative procedures. This is fortunate, as it is difficult to get at the focus of disease in many instances, and our methods of operation are far from being crystalized.

We may first endeavor to remove the focus of disease in the middle ear. This may be done by opening abscesses, removing granulations, polypi, or necrosed bone, and by the use of quiet, aural douches of hot water, combating any incidental conditions that may arise, and the free use of alteratives, and absorbents, such as mercury and the iodides. If these measures fail, and the symptoms continue or grow worse, the mastoid process should be freely opened, even though no signs of disease be here present.

If now, after awaiting a reasonable length of time, the symptoms show no sign of abating, we must direct our operations directly to the sinus or vein involved. If thrombus of the lateral sinus is found, the internal jugular vein should be tied at two points in the neck, and the intervening vein tissue removed, after which the surrounding parts should be thoroughly cleansed, etc. This procedure is necessary as an obstacle against the passage of the septic material into the general circulation.

The lateral sinus may now be exposed, by opening the skull one inch behind, and a quarter of an inch above the centre of the bony meatus. A free opening should be made, the diseased area thoroughly and antiseptically cleaned, and unhealthy tissue removed, after which it should be packed with iodoform gauze.

Ballance says that after the jugular is tied the face and lips become blue, but that it is only temporary.

Surgical interference upon the other sinuses and veins is not sufficiently crystallized to warrant extended remarks.

THE ACTION OF REMEDIES.

A paper read at the joint session of the Brainard District Medical Society and the Illinois Central District Medical Society, at Springfield, Ill., Oct., 13-11, 1892.

BY J. J. CONNER, M.D.,

MEMBER OF AMERICAN MEDICAL ASSOCIATION; MEMBER OF MISSISSIPPI VALLEY MEDICAL SOCIETY; MEMBER OF ILLINOIS CENTRAL DISTRICT MEDICAL SOCIETY; SECRETARY U. S. PENSION EXAMINING BOARD, PANA, ILL.

1. The lancet; 2. Veratrum viride; 3. Opium; 4. Coal tar derivatives; 5. Ergot; 6. Heat (poultices) 7. Cold; 8. Quinine; 9. Ammonia; 10. Calomel.

Mr. President and Gentlemen:—In presenting this subject to this Society it is not my purpose to traverse much of the field of materia medica, nor to notice many remedies, but to confine myself to a very few.

And in order to get a better understanding of the subject, I thought it best to choose some well known disease to base our study of remedies upon. I have therefore chosen pneumonia as a type of disease suitable for our purpose. As to whether or not pneumonia be a specific disease, having a certain definite course to run, and depending upon a particular microbe for its cause, or merely a local inflammation depending solely upon local causes, I shall not stop to discuss. I will say this, however, in the language of that Nestor of western medicine, N. S. Davis, "that the same process of reasoning that has caused many to call it (pneumonia) a general febrile disease, would equally assign all acute inflammations of important structures or organs to the same class." Neither shall I consider in detail the pathology of pneumonia, which, I doubt not, is as well understood by my hearers as by myself. I believe that we have in pneumonia—call it if you please, either a general febrile disease or a purely local manifestation—and in inflammation, precisely the same phenomena. In them both we have "a morbid process or alteration in a part in which there is perversion of nerve action, a change in the calibre of the arterioles, capillaries and veins; an increase in quantity and a change in the quality and motion of the blood, and in the conditions and relations of the elements of the tissues; reducing them to a more embryonic state, resulting in various kinds of metamorphoses. There is a tendency to stasis of the blood, effusion of liquor sanguinis and leucocytes through the coats of the distended vessels; and of the red corpuscles by the rupture of their coats. There is generally a tendency to the proliferation of tissue cells and to the formation of new products, viz., lymph, pus and false membrane, and sometimes to the destruction of tissue. There is perversion of the function of the organ involved, and this process is generally attended with heat, pain, redness and swelling, and by a more or less febrile disturbance of the general system." I wish particularly to call your attention to two conditions which I believe to be *the sources* of danger to which a patient laboring with pneumonia is subject. I refer to the engorgement of the right side of the heart and to the distended condition of the pulmonary vessels of the lobes of the unaffected portion of the lungs. Of course, as will be noted further on, another danger accompanies or follows the great dilatation of the vessels, viz., the paralysis of the vaso-motor nerves. As is well understood, the heart, in pneumonia, has an increased amount of work thrown upon it. The affected lobes are no longer capable of allowing a circulating current of blood passing through them, but there is a stasis of the blood and consolidation of the inflammatory products which have been thrown off during the process. Now this being so, the heart is obliged to force the same amount of blood through the unimpaired lung tissue in a certain given time as it did while all the lung substance was healthy. The unimpaired lung tissue can oxygenize only a given amount of blood in a certain time, but now all the blood must be renovated as fast and as perfectly by one lung, or by two or three lobes as it was by both lungs or all five lobes before the pneumonia began.

Now, what are the indications for treatment here? Evidently to withdraw the force of the increased circulation from the distended blood vessels in the yet unimpaired lung tissue, and to reduce the amount of work of the heart, thereby preventing distension of the capillaries and paralysis of the vaso-motor nerves, and to maintain the reserve force of the cardiac muscle, and promote resolution in the inflamed lung. If we do not relieve the pressure in the unimpaired lung tissue there will be extension of the pneumonia, because a part of the phenomena of inflammation is an increased amount of blood, in a part accompanied with rapidity of motion of the blood current. This increased blood supply and rapidity of motion in the yet unimpaired lung tissue is what leads on to inflammation of that portion which is still able to do all that it was accustomed to do, but if pushed to the extreme limit, will become itself involved in the morbid process and incapable of doing its usual amount of work. This extra blood supply to a lung yet unimpaired, will, if not soon corrected, so increase the calibre of the capillaries and arterioles that the vaso-motor nerves supplying the muscular coats of these vessels will become paralyzed, rupture of the walls of these vessels will occur and the whole lung tissue will be involved in the pneumonic process.

If we had to deal with two or more reservoirs which were supplied by a large and sufficient water-course for all proper demands upon them, and if by some mishap one or more of these reservoirs became disabled, and all the water was run into one of these reservoirs we would most certainly try to turn a part of the water in another direction, or shut off a portion of the water for fear of bursting the still unimpaired reservoir. If we for want of time or material failed in our endeavor to turn aside the rushing water, it would be necessary to tap at a certain, safe, and convenient place, the sound reservoir and relieve the undue pressure for fear the increased amount of force put upon the walls or embankments would cause them to give way. If we relieved the pressure in time we might be able to save the structure, and when the flood was over and the pressure taken off, the impaired reservoir might be repaired. So with the lungs in the storm and flood of pneumonia, we can, if the onset is not too sudden and great, cut off or relieve the pressure of the lungs by appropriate medicines and remedies, if we are given time, but if time is not given for our medicines to act, we can withdraw a portion of the blood from the turgid lungs and relieve the pressure by tapping with the lancet. The lancet is peculiarly applicable in cases of what the French are wont to call, "cerebral pneumonia," and in severe forms of pleuro-pneumonia. I have used the lancet in only a few cases, and in no case that I have used it have I regretted it; but in several cases where I did not have the courage to use it, or where such strong objections were urged against it, that I deferred to them, I have been exceedingly sorry for it afterwards. In using the lancet I bleed for effect and not for quantity.

Case 1.—F. L., male, German-American, 20 years of age. While fox hunting one night sat down upon a log to rest, being at the time wet with perspiration, although the ground was frozen and partly covered with snow. Twenty-four hours afterward, on the morning of March 13, 1881, I was called to see him by his father. As I drove to his home about three miles in the country, I made up my mind to bleed him, as I knew he was a strong vigorous young man. I had recently been reading in the *Medical and Surgical Reporter*, Dr. Hiram Corson's views on bleeding in pneumonia. I had pictured in my mind a flushed face, dry skin and bounding pulse as what I should find when I got to my patient. Judge of my surprise and great disappointment when I found a pale face, moist skin, and what I now call a clogged or obstructed pulse, but which I then thought was a weak one. I was afraid to bleed him in the condition he was in, as I was a comparative stranger in that neighborhood, which had been dominated by irregulars and eclectics. He was in so grave a condition that I said to myself "if I bleed this patient and he dies it will be said that I killed him. I will therefore treat him on general principles and if he dies I shall not be blamed for his death." He steadily grew worse until the fourth morning, when he was raising a mouthful of very thin, bloody fluid almost every breath. I saw him again that night about 10 o'clock and believed he would die the next day. On the next day, being the fifth morning from my first visit, or sixth of his illness, I found him enormously improved. I saw upon entering his room, that a great change for the better had taken place, and I tell you I was frightened. I thought another doctor had been called in. I found on inquiry that at about 5 o'clock that morning the change had taken place. At that time, during a violent spell of coughing, his nose began to bleed and had bled fully a pint in a rapid stream. Nature, not being such a coward as I had been, was the doctor that had been called in, and had bled him copiously and had cured him. But I got the credit of it. This experience taught me a lesson which I shall never forget, and gave me courage.

Case 2.—Peter C., aged about 27; had been attending along with his friends and relatives, a protracted meeting during the month of March, 1884. I was called to see him on the 16th day of the month. One of his relatives had just been buried a few days before who had died of pneumonia after an illness of about one week. This relative had lived only about forty rods from my patient's home, and my patient attended him in his late sickness. Two doctors had attended him in his illness, but they could not save him. In a consultation they had said they believed bleeding would be beneficial, but neither one dared bleed him. Peter had been sick about 36 hours when I saw him first. He was in awful distress with pleuro-pneumonia. He was sitting up in bed, being unable to lie down, cramped nearly double, and drawn to the right side holding it tightly with his arm. His skin was more like a frog's than a human's. It was cold, clammy and purplish. His eyes were bloodshot and staring. He was crying incessantly, "Oh! Oh! Oh!! my side! Oh! my head!" Nothing but grunt, grunt, grunt, and hollowing with his head and side. He said, "If you can give me anything, doctor, that will make me easy I want it quick, because I can't stand this pain any longer." I said, "Will you let me bleed you?" He replied, "I never was bled, but if it will ease me I will do anything." I told him that it would give instant and permanent relief. His skin was so pinched and veins so small that the blood would not run, and I ordered a pan of hot water to bathe the arm in. I then bled him until the perspiration stood on his brow and he got dizzy. I laid him down and he fell into a sleep for a few minutes. He soon aroused and some one said, "Pete, what do you wish?" He said, "I have not eaten anything for a day and a night, but if you will give me a square meal I will be all right." I saw him twice after that and discharged him cured. He has told me many times since that I saved his life by bleeding him. He said that medicine would have been too slow to have saved him.

In early stages of pneumonia of moderate intensity I rely on veratrum viride as my sheet anchor. It will do good in all cases of pneumonia when seen early. In its action it is more like bleeding than any other drug that I am acquainted with. It is said to "bleed the patient into himself." That is, it dilates all the capillaries and small veins which are contracted over the entire body—especially in the skin and near the surface, and relieves the internal pressure. It acts, I believe, directly upon the pneumogastric nerve, inhibiting or putting a break upon the heart, slowing its action, and also upon the great sympathetic nerve which governs the calibre of the blood vessels, the arterioles and capillaries especially.

In the beginning of a mild case of pneumonia I believe it possible to abort it by a judicious dose of opium or morphia. The opium acts by relieving pain thereby giving rest and quietude to the organism. Nature here steps in and finishes the job.

Some of the synthetic coal-tar derivatives will do the same thing, and partly in the same way. They act also upon the heat centre of the brain. It is admitted, I believe, that there is a "heat centre" governing the temperature of the body.

Ergot is said to act beneficially in pneumonia by contracting the vessels in the affected lungs, driving the blood out where it is not needed and distributing it to the general system. I have tried it only in a couple of cases. The theory of it acting in this way credits the drug with having a little too much discriminating power. By its advocates it is claimed to have what may be called intelligence enough to act only on the muscular fibre of the blood vessels of an inflamed lung, leaving untouched all the other muscular coats of the blood vessels of the system. Will it do it?

Poultices are said to act by warming the skin which relaxes the surface blood vessels, which become filled with blood, thereby drawing it off the lungs. How about the application of cold to the chest in pneumonia? How does cold relieve the pressure of the lungs? How can cold affect the vessels in the lungs when they are protected by the skin, fat, muscles, bones, fascia and pleuræ? Is it not done by depressing the heart? A better place for it then would be at the back of the head and nape of the neck in the shape of an ice bag.

Who does not give quinine in pneumonia, especially here in Illinois, but who can say why he gives it? If there is congestion of the lungs due to malarial poisoning and we have to deal with what may be called a "congestive chill," like the old practitioners used to talk so much about, all well and good, but many of us do not believe in "congestive chills" any more. Quinine acts directly upon the blood and heart. It kills the malarial parasite of the red blood corpuscle, the protozoa of Zavaran, which he discovered in 1880, and since confirmed by Osler in America and by several others. It acts upon the heart, reducing the number of beats and thereby taking the force off the lungs. It dilates the blood vessels, too, and acts also upon the heat centre of the brain. It will inhibit the heart's action in animals even after the vagi are cut. If it acts upon the heart and blood vessels as noted above, it will do good in pneumonia by draining the blood from the lungs, As quinine is a deadly weapon to the red blood corpuscle parasite, it may be that it does its good work in pneumonia by killing the diplococcus pneumoniæ of Fränkel. To be of any utility, it must be given in large doses, at least as much as 30, 40 or 60 grains 24 hours. I am apt to begin about midnight, as the temperature is nearly always lower at that time than any other, and give what quinine I wish my patient to have for the day in the succeeding 12 hours. I think it always does good when administered in this way. I think it beneficial to begin the treatment of pneumonia with a mercurial cathartic. The mercury does good in two ways, viz.: It unloads the prima viæ as well as anything else, besides it prevents the formation of fibrin and helps the ammonia salts to dissolve it after it is formed. The calomel is a good diuretic, too.

Gentlemen, I thank you.

102 Second Street, Pana, Ill.

MEMORANDA, PRACTICAL AND SUGGESTIVE.

Read at the Annual Meeting of the New York State Medical Association, November, 1892.

BY H. D. DIDAMA, M.D.,
OF SYRACUSE, N. Y.

EARLY ASPIRATION IN PLEURITIS.

In many instances pleuritis, especially the dry kind, sometimes the moist—the quantity of effusion being small—gets well with little or no treatment.

In other cases, where the attack is more severe, recovery also occurs under the use of cathartics, diuretics, sudorifics and blisters, with or without total abstinence from water or other beverage. The illness—as is well known—is apt to be prolonged; the recovery is often incomplete, and the convalescence tedious and discouraging.

Furthermore, in a large percentage of cases, the therapeutic management just indicated fails entirely to secure a favorable termination. So that the thoughtful medical attendant is sometimes perplexed to determine whether the unsatisfactory course is due wholly to the malignancy of the disease, or in part to the imperfection of the treatment.

The consensus of modern medical opinion, as expressed in books, is that after giving the remedies a fair opportunity and a reasonably generous time to secure the absorption of the pleural effusion, if the desired object is not accomplished, or if the amount of transudation becomes rapidly so great as to imperil the life of the patient, then paracentesis should be cautiously, but to a moderate extent only, performed.

The limit of this probationary period, and the danger-symptoms and signs which should be manifest before instrumental interference is justifiable, are variously set forth by different authors. Ten days to four or more weeks if the flatness on percussion does not extend well above the nipple, and if dyspnœa is not of marked severity, would fairly cover the extreme time proposed by conservative experience for waiting and watching.

For several years a minority of physicians, including the writer, have pursued a different course, with more satisfactory results. We do not regard active catharsis, diuresis or diaphoresis as an essential or important part of the treatment. Anodynes and strapping while the pain is severe; tonics, as quinine, iron and strychnine, if the patient—as *he* often and *she* usually—*is in a weak condition; and then* when with mitigation of pain and some subsidence of fever, percussion shows that fluid is present, even if the amount does not exceed an estimated half pint, aspiration is performed.

The diagnosis is verified, and the depth of the trocar puncture determined, by the hypodermic needle. Cleanliness of skin and instruments is secured. The operation at this early period is done while the patient is in a sitting posture. No effort is made to leave a portion of the effusion to be removed by absorbents.

As a rule, which has scarcely an exception in the practice of the writer, a repetition of the operation is not needed. The lung expands, normal respiratory sounds reappear, and the friction fremitus returns with exaggerated distinctness. More or less pain or discomfort is felt in the affected side, but convalescence is rapid and unattended by great prostration, and the recovery is complete.

The experience of the writer has been reasonably extensive. He has had at least forty original cases where he has performed aspiration early; and the outcome has been such that he has no inclination to resort to any other treatment now known to him.

He has been called to a considerable number of cases where a diagnosis of hepatized lung, or enlarged liver, or malign tumors had been made, and also in consultation to several cases where the diagnosis was correct and early, and where the most vigorous antiphlogistic and eliminative treatment had been pursued from the outset. In these cases—and in these only—has he found the cautions laid down by the authorities important.

In some instances the lung, crowded or retracted to the upper part of the chest, had become imprisoned by adhesions, and even carnified, so that it could not expand, while the heart was pushed or drawn over, so that its pulsations were palpable and visible to the right of the sternum.

Only a portion of the fluid could be removed without exciting violent fits of coughing, and not infrequently, after a few days, a repetition of the operation was demanded.

In a few instances—where some of the patients were young and previously healthy—pyothorax was present, apparently because an early operation had not been performed owing to reliance on authorized medication, or because a faulty diagnosis had been made.

The supporting and alleviating treatment of pleuritis, combined with early thoracentesis, seems to possess these positive and negative advantages: It is easily and safely done; it does not add to the local inflammation, but actually relieves and shortens it; it is not debilitating; it removes in a few minutes a quantity of fluid which could not be removed through the skin, kidneys and bowels in many hours, days or even weeks, and it does all this without causing weakness and slow recovery; it prevents the carnification of the lung and those tender adhesions which in late aspirations eventuate in deformity of the chest, and hemorrhage into the pleural cavity; it prevents congestion of the lung on the unaffected side, and injurious dilatation of the right ventricle; it probably secures exemption from empyema in many cases; and if it be true (as some active writers vehemently claim), that every case of pleuritis is tubercular, then this treatment, like the prompt removal of the fluid in tubercular ascites, is decidedly the most efficacious in preventing or arresting general bacillary infection.

In short, it averts death, and most safely, easily, promptly, *permanently cures the patient.*

SOCIETY PROCEEDINGS.

The American Public Health Association

Held its recent annual meeting in the City of Mexico. We are pleased to be able to give our readers the following:

Monday, November 28.

The general program prepared by the local committee o arrangements is given as under:

9 a.m.—Visit to the Mordos Hospital, at San Juan de Dios

Visit to the San Andres Hospital, on San Andres street.

Visit to the Cathedral square of the Constitution.

Visit to the Home for Foundlings on Second Merced street.

Visit to the Disinfection Department and Jourez Hospita at San Pablo.

3. p.m.—Visit to the School of Medicine, corner Doming and Perpetua streets.

Visit to the Normal School for lady professors, Sta. Catalina street.

Visit to the Law School, Encarmacion street.

Visit to the Normal School for male professors, Cerrada o Sta Teresa street.

Visit to the Conservatory of Music, at the University.

Visit to the Installation of Pumps, at San Lazaro.

At evening more music in the court of Iturbide Hotel This being the place of rendesvous,everybody(substantially met each other here from twice to a half dozen times daily so we all enjoyed the national airs of the various countrie represented at the meeting as well as the other ppoular air rendered by the orchestra before retiring for the night.

Tuesday Morning November 29.

Pursuant to announcement and according to program th twentieth annual meeting of the A. P. H. A., convened i the Chamber of Deputies (cor. Factor and Canoa streets) i the city of Mexico, the first session being called to order a 10 o'clock by the President, Dr. Felix Formento, presidin who in a few well chosen remarks, declared that the meeting was now formally opened. His first remarks wer spoken in English. After which he duplicated the same i Spanish.

Among the things he said were: This annual mee ing promises to be the grandest and most glorious of an preceding one, up to this moment 546 applications for membership having been passed on and recommended by th Executive committee for election at this meeting. Sevent five papers have been received, and altogether this meetin in our sister republic will be a most noticeable one in th history of the epoch of this organization. (He closed amidst plaudits).

The Chamber of Deputies (cámara de diputados) is a very imposing structure built of stone and marble, contains a parquette circle, two dress circles and four balconies, besides three boxes in tiers on either side right and left to the stage. The entire chamber and boxes were beautifully embellished with many flags of the Mexican and United States Republic, Central American colors and those of Great Britain, the folds of each in numerous instances being tastefully interwoven with each other. At the Tribune, above and about the President's chair, the beautiful stars and stripes of Uncle Sam predominated, although the Mexican colors of red, white and green in satin bannerettes was conspicuous in many of the other chairs and throughout portions of the dress circles. The Mexican eagle in colors was also above the president's chair. A magnificent chandelier hung in the center of the chamber suspended by a huge cable chain from the ceiling having 250 candle lights. No ladies were present at this first morning's session, and Spanish or Mexican physicians predominated in numbers. Upon ordinary occasions the boxes, parquette chairs and dress circles are occupied by diplomates and deputies, but in this instance every seat occupied contained not only a deputy or diplomat but a scientist in hygiene. In the parquette as elsewhere, it contained nice cane bottom chairs. portable. A beautiful moquette carpet, rich in design covered the floor, and throughout the entire building a great deal of beauty and taste was displayed, besides containing a great deal of gilt and rich moldings. On either side of the foyer were a number of exceedingly tastefully arranged dressing rooms, etc. In the chamber 1,000 persons can easily be seated. It was built in 1860 at a cost of $500,000.

The President was followed by Rev. J. W. Butler, D.D., in an eloquent and affecting prayer in English.

Chairman Liceaga of the local Committee of Arrangements made several announcements in the Spanish language, after which he stated in substance, translated, that he hoped any imperfections that might creep in in the program, entertainments or otherwise would be excusable, and if we did not get all we hoped or wished for, to call for it, as the committee and citizens would do everything willingly to make our guests welcome and feel at home.

Dr. Watson, the Secretary, then announced on behalf of the Executive Committee that 546 applications which he held in his hand were recommended for membership as follows: 189 outside the Federal District of Mexico, 141 within the Federal District of Mexico, 216 from the United States and Dominion of Canada.

A motion which was made empowering the Secretary to cast the unanimous vote of the Association for the names recommended without reading them, prevailed, and the vote was so ordered and declared a valid one.

Dr. Formento arose and proposed the name of President Profiro Diaz for honorary membership. The same being seconded was unanimously carried amidst vociferous applause.

The first paper read was entitled: "Influence of Climate on the Progress and Severity of Pulmonary Tuberculosis in the United States of Mexico, and Practical Consequences that are Inferred." by Dr. A. J. Carbajal, of the City of Mexico, the author reciting an experience of twenty-three years in civil and two years of hospital practice. His theme was handled in a most satisfactory manner. The paper was read in Spanish.

The second paper read was by Dr. R. C. Kedzie, of Lansing, Mich., who selected for its title "The Ground of Safety." The author illustrated his remarks by essaying to blow air through leather, India rubber, plaster and cylinders of oak wood each twelve inches in length and two inches in diameter, before an ignited candle. He demonstrated that he could blow air readily through a six inch cylinder of plaster. To blow through a paper wall—it was dead and it does not breathe; in other words, it is a strangled wall. A calcimined wall laid on with glue, there is a very slight breath. A dry plastered wall—air will pass through it. A wet plastered wall—air is drowned or strangled; water stops soil breath.

Third paper, a short one, presented by Dr. W. A. Haskell, of Alton, Ill., read by Dr. *Gihon*, entitled, "Medical Demography."

The fourth paper presented was by Dr. Domingo Orvanos, of the City of Mexico, and first Vice-President of the Association. The author, who read in Spanish, chose for the title of his paper, "Climate of the City of Mexico." This paper was discussed at length in Spanish by Dr. Otero, of Mexico.

The Association then adjourned until 3 P.M. to meet in the main hall of the National Preparatory (High) School.

The scientific business during the afternoon of the first day, at the National Preparatory School, was transacted with Dr. Formento, the President, in the chair, and was well attended.

The first paper read was by Dr. Rafael Lavista, of the Federal District of Mexico, whose subject was, "General Considerations upon the Public Health," read in Spanish. It was a brief paper and its author elicited considerable applause at the close of reading it.

Dr. W. M. Yandell, of El Paso, read the second paper, which was a brief one, on "Contagious Diseases on the Rio Grande Border." The paper was statistical in nature, timely and its author was warmly applauded.

A paper showing a new method of quantitative chemical analysis to obtain nitrogen from organic matter, based on the transformation of nitrogen into ammonia, was read. The process was by the Mexican chemists Alexander Noibey and Victor Lucioy Ortego.

The next paper read was by Dr. William T. Corlett, of Cleveland, O., "On Some of the Infectious Diseases."

After the reading of the above paper Dr. Liceaga introduced the subject, "Against the Marriage of Persons Infected with Tuberculosis." He argued that phthisis was a contagious disease and cited a number of cases to prove his statements. Considerable discussion ensued. The tendency and preponderance of opinion was to agree with Dr. Liceaga.

An adjournment was then taken to meet in the National Theatre at 8 P.M. to attend the solemn inaugural session. This is a beautiful building and was filled from pit to dome by the best citizens of the Republic (ladies and gentlemen) in evening dress. Archbishop Alarcon invoked the Divine blessing at this formal solemn opening, and Dr. Liceaga delivered the address of welcome. During the evening a superb orchestra of sixty pieces under the directorship of Senor Jose Rivas, Director del Conservatoire National de Musical, discoursed fine music, among the numbers being the Star Spangled Banner, God Save the Queen, Mexican National Hymn, etc.

The limited space of THE JOURNAL precludes the publication *in extenso* of the very able addresses delivered at the formal solemn inauguration this (Tuesday) evening by Dr. Liceaga, Chairman of the Local Committee of Arrangements, and Dr. Formento. President of the Association. The following extracts of each are herewith given. Dr. Eduardo Liceaga closed his magnificent Address of Welcome in the following words:

"And what have our visitors come to do in our midst? They have come to impart to us their own faith, to instruct us in their method of working, to spread new ideas, to concert with us a mutual plan of defense against the propagation of such diseases as arise among us, to see what means Nature employs to enable us to breathe at this immense altitude, to observe how we build our dwellings in a climate in which artificial heat is not required, to admire the purity of our atmosphere, the transparency of our light, the radiance of our sun, to examine the modifications produced by the meteorological conditions of this altitude, within the tropics, on the mode of existence of animated beings.

"As for ourselves, we welcome them with open arms. We purpose to show them our hospitals, far inferior, alas, to the splendid monuments which they have reared in the name of charity; to explain in what manner the Government extends protection to foundlings, to ailing children, to orphans, how it imparts to them a knowledge of the mechanical arts, how it reclaims the erring, and how many of these institutes are organized on a military footing. We shall conduct our guests through the establishments where education is furnished to the teachers, male and female, whose duty it will be to spread the benefits of elementary knowledge, through our Preparatory Professional School, through our Schools of Medicine, Jurisprudence, Music, and Fine Arts, through our National Medical Institute—not on account of the intrinsic excellence of these establishments, nor because we imagine that they can endure comparison with the superb foundations which private munificence has reared in your own countries—but because we believe that perchance you may take an interest in beholding these evidences of the moral and intellectual development of this people, so torn by political convulsions which attack nations in their infancy and adolescence just as disease attacks and exhausts the physical and mental constitution of man in boyhood and early youth.

"We shall show you, too, the works recently undertaken to secure an improved water-supply. At your last meeting one of our sanitary engineers explained to you the project for a new sewerage system for the city, to supersede the present very defective one, and now you are about to see the provisional works undertaken for the purpose of improving the flow of the sewers until such time as the new scheme can be carried out in its entirety. We shall enable you to view, and as hygienists you will be interested in viewing, one of the most gigantic works ever undertaken for the sanitation of any city—the drainage of the Valley of Mexico. Finally, we shall conduct you through the suburbs of the city and spread before your eyes a view of this broad valley from the historical hill of Chapultepec.

"And as for you, esteemed fellow-countrymen, who have also left home and business and come hither from afar to recount your experience of the dreaded yellow fever, your speeches will inform us whether that scourge is produced spontaneously among you or whether it is imported, and if so, in what way, and what steps you have taken to liberate the coasts from its ravages. Others among you will tell us the places where malaria prevails and what has been done for their sanitation, the regions in which tuberculosis is unknown or its ravages are less violent than on our coasts, the towns which are free from diphtheria, those others in which it rages, the measures which you recommend to prevent the spread of typhus, the method by which your cities are supplied with water, and all other matters of interest to hygienists.

"Little has been done as yet towards the sanitation of our cities, but this is a truth which we need not be ashamed to confess, for we are a young people desirous of understanding thoroughly the evils under which we labor before seeking a remedy. Our Governments have given us good sanitary laws and it remains for us to devote our intelligence, our energy and our zeal to the service of our countrymen and the fulfilment of those laws, thus contributing to the noble ends of the American Association of Public Health, which has accomplished such splendid results in the United States and Canada, and which will, we trust, accomplish the same results here.

"Gentlemen, receive the thanks which I offer you in the name of my country for having selected this city as the scene of your annual meeting.

"Gentlemen, I bid you welcome."

Dr. Felix Formento concluded his lengthy address as follows:

"In my opening remarks, were mentioned the causes which created particular interest in the present reunion; a spirit of justice induces me to recall here the two factors which have mostly contributed to its success:

"Shortly after our last meeting in Kansas City, our worthy Secretary undertook, in the interest of our Association, a long and fatiguing journey to the remotest regions of this immense country, to Cuba and Central America. Its principal object was to excite the interest of the people and of the different governments in sanitary matters and to obtain their participation in this meeting. To that effect Dr. Irving A. Watson was commissioned "Health Ambassador" to Mexico, Cuba and Central America. For the first time, perhaps, was such a mission confided to any one. No ambassador of kings or monarchs ever received a more flattering and hearty welcome—an honor rendered to the personal merit of the man as well as to the representative of this great international organization. His mission was a complete success.

"The Chairman of the Local Committee of Arrangements plays a no less important part in the happy results of our meetings. No better selection could have been made than that of our eminent and distinguished chairman, Dr. Eduardo Liceaga. To the high official position he occupies, to the legitmate influence he commands, to his scientific attainments and social standing in this community, the success of the Congress is mainly due.

"This double debt to our Secretary and to our Chairman of the Local Committee of Arrangements, is cordially acknowledged and I take pleasure in tendering them the thanks of the Assembly and the assurance of my personal gratitude.

"Let us congratulate ourselves, gentlemen, upon our acceptance of the pressing invitation of the Mexican Government to hold our meeting in this city. The intelligent transfer of the scene of our debates, far beyond our boundaries, to the capital of our friends and neighbors, is the first step to the scientific unification of the whole American Continent. This is the first International Health Congress held on this side of the Atlantic. As such it is our duty to unravel the problem of yellow fever, which is the only obstacle to the much desired commercial, social and intellectual intercourse between our respective countries and nations. Yellow fever is the curse and drawback of America's southern climes. If this meeting could successfully devise the means of stamping it out forever from all parts of the Continent, it would richly deserve the blessings of future generations.

"In another point of view, this meeting deserves our reciprocal congratulations. We need only to meet in conference and immediately a bond of friendship is sealed, not merely between scientists, but between the two nations.

"In addition, what an opportunity, never to be forgotten, of seeing, of admiring Mexico in all her glory! Of being able to witness the grandeur, the prosperity of this land of the Montezumas under its progressive republican form of government, its modern resources, to contemplate its bold railways and viaducts, suspended in mid air, in their vertiginous ascent and descent of gigantic mountains, its beautiful valleys, torrents and streams, its majestic scenery, its thriving towns and cities, rendered rich by local industries, its mines and its forests, its palaces, cathedrals, schools, and museums—the whole thing brought out in relief by the vestiges of its immortal past, a double civilization in striking contrast!

"Should we leave unmentioned its delightful climate, its blue sky, its wonderful fruits and beautiful flowers?

"But above all stand the noted courtesy, the exquisite refinement of its inhabitants, who have made us at home and filled our hearts with everlasting gratitude!

"This day will be inscribed in gold letters in the Annals of the Association, and I hereby express the sentiment of the assemblage, when I exclaim from the bottom of my heart: 'Viva Mexico!'"

To resume our personal reminiscences. This afternoon among the notable places visited were the National Palace, where we were received with honors by a number of army officers who devoted themselves to showing us very many sights in the various apartments throughout the building, among which was President Diaz's state chair, the president's rooms, portraits of Inarez, Hidalgo, Washington and Maximillian and many other historical personages in the Ambassador's hall. We were also escorted through the Government departments, other public offices, etc., and before leaving were presented to General Pradillo, the Governor.

We also visited the National Museum this afternoon and saw many curious Aztec antiquites, picture writing, Montezuma's shield, the statue of Huitzilopochtli. the God of War, the Calendar stone, Tula Monoliths, goddess of water, Palemke cross, Chacmol, and the Sacrificial stone, oil portraits of viceroys and of Cortez, Maxmillian's gala coach, and his silver service. We also visited the Natural History and Mineralological departments that contain an innumerable variety of skeletons—the taxidermists' art, etc.

The social program for this (Tuesday) day as arranged by the Social Committee was as follows:

At 8 A.M., visit to the Beneficiary Offices and Central Pharmacy on Xicotencalt street; visit to the Mining Schools on San Andreas street.

At 1 P.M., visit to the Arts and Trades School for men, Estampa of St. Lorenzo street; visit to the Preparatory School, San Ildfonso street.

From 3 to 5 P.M., session in main hall of said school.

5 P.M., visit to Central Meteorological Observatory, at the National Palace; and at 8 P.M., solemn inauguaration at the National Theatre.

(*To be concluded.*)

DOMESTIC CORRESPONDENCE.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

It is safe to affirm that nine-tenths of the regular profession heartily agree with the views, stated by "Conservative" in his letter to THE JOURNAL of the 10th inst., as to any essential change in the code of Medical Ethics—as now recognized by the American Medical Association.

In addition to his admirable presentation of affirmative reasons for the retention of the code in question, it may be stated that every annual meeting in the history of the Association has offered an opportunity to cancel or revise the provisions of said code—and aside from recent left-handed movements having origin in a single locality and society tributary to the organization—and whose animus and spirit only tended to sustain the principle they would undermine—other than this the code has retained that freedom from disapproval due to its excellence and origin. As the declaration of cardinal principles relative to medicine, it is the analogue of that framed by Jefferson as applying to the citizen, and that upon which each are founded in theology, the "sermon on the mount." Its abrogation would be worse than suicidal, its revision—as to essentials—a dangerous experiment.

The one provision objected to by the free for all go as you please advocates, is, in the nature of events and the period which now obtains *the one* specially amenable to a more rigorous interpretation or amendation—the daily press in solid phalanx for the defense and promotion of quack advertising, methods and literature, its direct channel of finahcial sustainance, is a giant menace to honorable practice, and an increasing force for the breaking down of all distinctions between merit and fraud, ability and ignorance, honor and cunning. No such influence operates to prevent the full recognition of merit and talent by the press of legal and clerical claiments of public approval, hence public security against imposition in medicine resides in the profession, and handicapped, as stated at that, by the immense dead weight of a subsidized press. It follows that medical impostors have allies and support quite sufficient without adding the assistance of a common level consultationship with qualified practitioners. It degrades, and does not—for it cannot—elevate decent and legitimate practice, something that demands, like all worthy factors of civilized life, the most vigilant care. IOWA.

BOOK REVIEWS.

DISEASES OF THE CHEST, THROAT, AND NASAL CAVITIES including Physical Diagnosis and Diseases of the Lungs, Heart, and Aorta, Laryngology and Diseases of the Pharynx, Larynx, Nose, Thyroid Gland and Œsophagus. By E. FLETCHER INGALS, A.M., M.D., Professor of Laryngology and Practice of Medicine, Rush Medical College; Professor of Diseases of the Throat and Chest, Northwestern University Woman's Medical School; Professor of Laryngology and Rhinology, Chicago Polyclinic. etc., etc. Second edition, revised and enlarged. 240 illustrations. Octavo, 700 pages, extra muslin, price, $5.00. William Wood & Company, New York.

The second edition of this book is a gratifying improvement on the first. The author has done himself credit and added to the value of this volume in several directions. In the part devoted to the heart and lungs he does not restrict himself, as in the first edition, to the diagnosis and treatment, but has amplified his work by adding the subjects of etiology, pathology, symptomatology and prognosis. The division on nose and throat diseases has been quite largely re-written. In passing from diseases of the lungs and heart to those of the nose and throat, one cannot escape the impression that the natural dissociation of these subjects should induce the author to produce two books instead of one. This would enable him to do greater justice to his acknowledged ability by treating in detail in one volume those diseases which lie in the province of the general practitioner, and in another, those affections which the modern evolution of the science of the economy of labor has assigned to a generally recognized specialty.

Probably no one will feel more keenly than the doctor himself the embarrassing limitations imposed on this work, which, if treated with desirable fullness, would far outgrow the handsome and convenient book he has produced. The inference is naturally suggested by the regrets expressed in the prefaces to both volumes, that it is impossible for him to accord credit to many authors to whom he is indebted for material, since this feature forms not the least interesting and weighty part of such a treatise. The writings of Morrell Mackenzie afford a generous and scholarly illustration of this kind of authorship, and doctors, like lawyers, are fond of having authorities quoted.

The article on pulmonary phthisis is limited to twenty pages. The reader will wish it had been extended to double that number in Dr. Ingals' entertaining style. No room is given to tuberculin, but the details and results of the Shurley-Gibbes treatment are plainly and practically stated. Asthma, on which Hyde Salter has written a book, is given a little more than four pages. The author seems to have lost none of his enthusiasm for the galvano-cautery. The writer recently asked a specialist and professor in these diseases what galvano-cautery apparatus he employed. "Not any," was his reply. But there is a happy medium in these matters, although it may not be the patient. The doctor also retains his preference for aqueous solutions and powders in catarrhal conditions. The frequency with which patients are given cocaine preparations for home treatment is surprising when we remember its paralyzing effect on the vaso-motor nerves, sometimes producing a secondary congestion which transcends the existing pathological condition, and knowing the misery which the cocaine habit has inflicted on its victims.

In the article on "throat deafness" the theory is announced that in rarefaction of the air in the tympanic cavity "producing tension of the tympanic membrane, the chain of ossicles is put on the stretch," etc. This is somewhat at variance with the teachings of the older authorities. On page 602 there is described the appearance of the drum head in the region of the "malleolus"—probably a cerebral slip, the author having ankylosis in mind. His advice to have patients treat themselves daily by injecting vapors of iodine and eucalyptol into their middle ears with inflators is out of harmony with the teachings of the leading authorities of the day.

A commendable feature is the frequent use of comparative tables for differential diagnosis arranged in parallel columns, enabling the student to form a mental picture of the variations of similar diseases at a glance.

The publishers have maintained their high standard of excellence in the typographical art. The type is of good size, clear, with only little lapses into trying fine print, and the paper has but one fault. It is glazed sufficiently to reflect the light into the reader's eyes at night. As physicians usually have no other time for reading, it is unpardonable for publishers to inflict this eye-weakening punishment upon their best friends. The book is embellished with numerous illustrations that are generally good.

One does not need to jog his memory very violently to stir up the recollection of the time when western men thought it necessary to draw their medical inspiration from the founts of learning which, *cum gratia Dei*, blessed that part of America only that lay east of the Alleghany mountains. Since the profession of the great Northwest has irreverently dispelled this delusion, has the time not arrived when the execution of the mechanical and artistic part of our book-making can be effected in the neighborhood of the libraries and hospitals where the book material is produced? An answer to this question seems to lie in the fact that in Chicago there are 1,300 firms employing 20,000 people, sending annually more than 15,000,000 bound volumes to the book patrons of the world.

IT is said that its enemies spent $60,000 to defeat the Paddock Pure Food Bill. As it advocated patented and proprietary foods, etc., its death may not be regretted.

SELECTIONS.

THE BRAIN CENTRES OF THE EMOTIONS: ARE THERE SUCH CENTRES?—According to Spencer and Bain, those physical states which we class as feelings are inseparable from those which we class as intellectual processes. Feeling, thought and volition constitute a "trinity in unity;" they are characteristic in their several manifestations, yet so dependent among themselves that neither could subsist alone; neither will nor intellect could be present in the absence of feeling, and feeling manifested in its completeness carries with it the germ of the two others (Bain). Feeling, according to Spencer, is the primordial unit of mind, and emotions are highly complex aggregates of simple feelings.

Dr. S. V. Clevenger, in the *American Naturalist* for November, 1892, accepts and reinforces this view. The emotions have vaguely been regarded as having several centres, or a single centre. Often in physiological writings we encounter the term "emotional centre," and reasons more or less incorrect have been advanced locating this "emotional centre" at the base of the brain.

Emotionalism, Dr. Clevenger says, in a broad sense is nothing more or less than degrees of excitement. So from this standpoint it is a condition, an exaltation or depression of the nerve-centres; and hence it would be absurd to look for its centres. Joy, grief, anger, fear, jealousy, are all conditions which may engage every cell in the body at times. The fact that there may be crying and laughing centres in the medulla does not constitute that portion an emotional centre any more than we are justified in calling the leg centres in the brain-cortex, kicking centres. The laugh and cry may be purely automatic, and without reference to the emotions at all. Besides, some emotional exhibitions, such as tremblings and pallor, indicate that during emotional excitement nerve force is pretty well diffused throughout the body, and that no particular set of nerves is engaged. It would seem that in such instances there is excellent evidence of the absence of an emotional centre, and the shaken-up general nervous system can find no special outlet for the feeling.

When a rupture of a blood-vessel in the motor centres of the brain causes paralysis, and in cerebral degenerative states, such as are induced by alcoholism and senility, there is an increase of emotionalism. The patient may cry and laugh easily; but in such cases the higher control is lost, impressions are diverted from former channels in the brain to the more automatic ones lower down, but the emotionalism is the product of brain injury and is a debased condition, and hence has no centre in the brain. The fact that the brain-base at its junction with the spinal cord has laughing and crying reflex centres may warrant this area being named an emotional centre in a very limited sense; but, strictly speaking, there can be no such thing as a centre for the emotions, for laughing and crying are but two among a great number of emotional exhibitions, and they may recur unconsciously.—*Boston Medical and Surgical Journal.*

ELECTRICITY IN PELVIC TROUBLES.—On the use of electricity for pelvic troubles, Dr. Price says: "It is utterly incomprehensible how any sane man can advocate the use of electricity; it seems that it is only in such hidden regions as the pelvic that the electricians claim any resulting good from their treatment. Why not apply this all-powerful, this infallible and omnipotent curative effect of electricity to the resolution of abscesses found in the neck of strumous children? Certainly wealthy mothers would pay well, even handsome fees, to save their children from carrying through life loathsome scars. not to mention the satisfaction of the operator upon curing his patient without the deformity resulting from the formation of a cicatrix."—*National Medical Review.*

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All members of the Association should send their Annual Dues to the Treasurer, Richard J. Dunglison, M.D., Lock Box 1274, Philadelphia, Pa.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1271, Philadelphia, Pa., *sending him a certificate or statement that he is in good standing in his* own Society, signed by the President and Secretary of said Society, with five dollars for annual dues and subscription for The Journal. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly Journal of the Association will be forwarded regularly.

SATURDAY, DECEMBER 24, 1892.

THE CODE OF ETHICS, CONSTITUTION AND BY-LAWS OF THE AMERICAN MEDICAL ASSOCIATION.

The Committee on Revision, of which Dr. A. M. Holton, of Brattleboro, Vermont, is chairman, is anxious to obtain as much of an expression of sentiment in relation thereto as possible; to that end correspondence is solicited from all who are interested in this subject, in order to enable the committee to frame such a revision as will represent the opinions of the majority of the members of the Association. Such correspondence may be addressed to either member of the commiteee: A. M. Holton, Brattleboro, Vermont; Leartus Connor, Detroit, Mich.; H. D. Didama, Syracuse, New York; Daniel T. Nelson, Chicago, Ill., and Benjamin Lee, Philadelphia, Pa.

RESULTS OF RESEARCHES IN BACTERIOLOGY.

The practical value of bacteriology is now questioned no longer. The invaluable services which this young science has rendered preventive medicine by placing disinfection and sanitation upon a sound basis; the immense benefit it has brought to antiseptic and aseptic surgery and obstetrics by clearly defining the exact indications for, and the most reliable methods of sterilization; the positiveness in diagnosis which the actual demonstration of the specific cause of a disease affords; and the protective inoculation with attenuated cultures against infectious diseases in the domestic animals—these are results of bacteriological researches of such practical value as to satisfy the highest expectations of the enthusiast of a few years ago.

To-day bacteriology is about to revolutionize medicine by elaborating a specific treatment of the infectious diseases.

The demonstration that pathogenic bacteria are virulent on account of their chemical products and the study of the toxines and toxalbumens of infectious diseases led to the discovery of anti-toxines in the blood of animals immune against certain diseases and these anti-toxines were found to have an unexpected antidotal power. The researches of Buchner, Martin, Hankin, Nuttall, and others paved the way for the demonstration by Ogata and Jasuhara that the injection of a drop of blood from an immune frog will protect a mouse against an ordinary fatal anthrax inoculation, and then Behring and Kitasato showed that the blood of animals immune against tetanus and diphtheria, if injected into susceptible animals, prevents fatal infection with virulent cultures of the bacilli of these diseases; suitable experiments readily showed that the toxalbumen of the tetanus bacillus is nutralized when mixed with the blood of immune animals and the next step was the isolation of the tetanus-anti-toxine by Tizzoni and Cantani and the successful treatment of actual cases of traumatic tetanus by means of tetanus-anti-toxine injections. Already six cases successfully treated by this novel and specific but absolutely scientific method have been recorded in medical literature, the first one being reported by Rudolph Schwartz.

G. and F. Klemperer then showed that the blood serum of animals artificially immune against croupous pneumonia renders susceptible animals immune and that it has a direct curative effect if injected after the development of the disease. Preliminary communications are at hand announcing the discovery of anti-toxines antidotal to tuberculosis and to rabies, and numerous ingenious experiments are constantly being made demonstrating that acquired immunity is due to the development of anti-toxines. Recently Sternberg has demonstrated by proper experiments that the blood serum of calves immune by previous attacks of vaccinia to vaccine virus contains something which neutralizes humanized or bovine lymph.

These few lines, briefly touching the main landmarks in the development of the present knowledge of the toxines and anti-toxines of infectious diseases will serve to call attention to the revolution in treatment which these researches may bring about. The work of isolating anti-toxines, of testing their specific action in neutralizing the toxic products of specific diseases both before and after the development of the disease, and the task of producing anti-toxines in amounts sufficient and suitable for practical therapeutic use, will be carried on enthusiastically and unremittingly by investigators all over the world, each believing that when bacteriology discovered the anti-toxine a new era dawned in the history of medicine—the era of specific treatment of infectious diseases.

A PROPOSED CHANGE IN THE MEDICAL COURSE OF STUDY.

One of the most serious errors in our present course of medical study, as offered in the best four year institutions, lies in the presentation of too many subjects at a time. Time was when the medical school offered six studies and had six professors. During the first year the student had anatomy, physiology and materia medica, during the second year medicine, surgery and obstetrics. In fifteen years as many new branches have come into the curriculum, and yet in many schools six or more studies are required of the student coincidently during the crowded term of each year. From an educational standpoint, this is a grave error. Not more than four different branches should be required of a student at a time. The course of lectures and laboratory work should be divided into two portions for each year. The first portion should be given during the first half of the term, the second portion during the second half.

In this way the student could go about his work without confusion and yet with sufficient variety. At the end of the half course there should be a final examination and credit should be given for the work done. The quality of the work done would be bettered by the concentration both for the teacher and the student.

The course of study might be something like the following, remembering that each branch would receive *one* hour *a day* in recitations or lectures and *two* hours *a day* in laboratory work and clinics during seventy days.

FIRST YEAR, FIRST HALF.

1. Comparative anatomy, laboratory.
2. Chemistry, recitations.
3. Physics, recitations.
4. Physiology, recitations.

FIRST YEAR, SECOND HALF.

1. Histology, laboratory.
2. Chemistry, laboratory.
3. Human anatomy, recitations.

SECOND YEAR, FIRST HALF.

4. Human anatomy, recitations.
2. Human anatomy, laboratory.
3. Histology, laboratory.
4. Elective work.

SECOND YEAR, SECOND HALF.

1. Embryology, laboratory.
2. Human anatomy, laboratory.
3. Materia medica, recitations.
4. Elective work.

THIRD YEAR, FIRST HALF.

1. Pathology, general, laboratory.
2. Medical clinics.
3. Medicine, recitations and lectures.
4. Topographical anatomy and physical diagnosis, recitations.

THIRD YEAR, SECOND HALF.

1. Pathology, special, laboratory.
2. Surgical clinics.
3. Surgery, recitations and lectures.
4. Elective work.

FOURTH YEAR, FIRST HALF.

1. Two specialties, each one-half, lectures and recitations.
2. Clinics on specialties.
3. Clinical diagnosis, laboratory.
4. Thesis work.

FOURTH YEAR, SECOND HALF.

1. Two specialties, each one-half, lectures and recitations.
2. Operative surgery, laboratory.
3. Clinics on specialties.
4. Elective work.

This rude outline is enough to show what can be done. It might be well to offer this work twice a year in the larger schools, and in that way the capacity of the best located schools could be doubled.

Four of the eight groups could be given each spring, alternating from year to year; or better still, the school could continue the year through, and sufficient elective work offered to lengthen the term to nine months, These elective courses would be a means of medical culture for the undergraduate and would furnish an opportunity for post-graduate work.

The Southern Medical College Association.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION:

An editorial in your issue of December 10, 1892, in reference to the two Medical College Associations, does great injustice to the action of the Convention of the Southern Medical Colleges, which was recently called to meet and did meet, in Louisville, Ky., for the *sole purpose* of raising the standard of medical education in the South.

At a meeting of the Faculty of the Medical Departments of the University of Nashville, and Vanderbilt University, in August last, a committee was appointed to call a Convention of the Medical Colleges of the South for the purpose of raising the standard of medical education in the South. The call was made by circular letters mailed to the officers of every reputable Medical College in the South, and answers were received from all addressed (except one) warmly endorsing the movement and promising hearty coöperation.

The "sequestered" city of Louisville was named as the place of meeting, and the 16th of November last as the time for the meeting.

Every reputable medical college of the South, except one, was represented by either delegates or by letters.

Methods of instruction and requirements for matriculation, which differed in no essential particular from the plans and requirements of the American Medical College Association, except in the educational requirements, were offered and adopted.

A large majority of those in attendance, while desiring as high a grade of literary qualification as could be attained, yet opposed the requirement of more than a good, substantial English education preliminary to matriculation. This difference in the requirements of preliminary education would, in the opinion of many of those present, deter a large number of medical colleges from becoming members of the American Medical College Association, and hence it was proposed to organize a Southern Medical College Association, provided three-fourths of the Southern Medical Colleges became members of that body.

Those present at the convention entered the Association with enthusiasm, and many others have since become members by letter, and in a short while every reputable medical school of the South will become members of the Association.

There is no valid reason why a college may not consistently be a member of both Associations, as they were both organized for the same purpose, viz.: the elevation of medical education, and there is no doubt that many of the colleges of the South will become members of the American Medical College Association at an early date.

The medical colleges South have determined to raise the standard of medical education to as high a point as the American Medical College Association will, it matters not how high this point is.

Below we insert the requirements in each Association side by side:

Requirements of the American Medical College Association.

Section 1. Members of this Association shall require of all matriculates an English composition in the hand-writing of the applicant of not less than two hundred words; an examination by a Committee of the Faculty, or other lawfully constituted Board of Examiners, in higher arithmetic, algebra, elementary physics and Latin prose.

Sec. 2. Graduates or matriculates of reputable colleges, or high schools of the first grade, or normal schools established by State authority, or those who may have successfully passed the entrance examination provided by the statutes of the State of New York, shall be exempt from the requirements of Section 1.

Sec. 3. Students conditioned in one or more of the branches enumerated as requirements for matriculation shall have time until the beginning of the second year to make up such deficiences, provided, however, that students who fail in any of the required branches in this second examination shall not be admitted to a second course.

Sec. 4. Colleges granting final examination on elementary subjects to junior students shall not issue certificates of such final examination, nor shall any member of this Association confer the degree of Doctor of Medicine upon any person who has not been first examined upon all the branches of the curriculum by the faculty of the college granting the degree.

Sec. 5. Candidates for the degree of Doctor of Medicine shall have attended three courses of graded instruction, of not less than six months each, in three separate years.

Sec. 6. Students who have matriculated in any regular medical college prior to July 1, 1892, shall be exempted from these requirements.

Requirements of the Southern Medical College Association.

Requirements for Matriculation.—Every student applying for matriculation must possess the following qualifications:

He must hold a certificate as the pupil of some known reputable physician, showing his moral character and general fitness to enter upon the study of medicine.

He must possess a diploma of graduation from some literary or scientific institution of learning, or certificate from some legally constituted high school, general superintendent of State education, or superintendent of some county board of public education, attesting the fact that he is possessed of at least the educational attainments required of second-grade teachers of public schools. Provided, however, that, if a student so applying is unable to furnish the above and foregoing evidence of literary qualifications, he may be permitted to matriculate and receive medical instruction as other students, and qualify himself in the required literary departments, and stand his required examination as above specified, prior to offering himself for a second course of lectures.

The foregoing diploma or certificate of educational qualifications, attested by the dean of the medical college attended, together with a set of tickets showing that the holder has attended one full course of medical lectures, shall be essential to attendance upon a second course of lectures in any college belonging to this Association.

Branches of Medical Science to be Included in Course of Instruction.—Anatomy, physiology, chemistry, materia medica and therapeutics, theory and practice of medicine, pathology, surgery, obstetrics and gynecology, hygiene, medical jurisprudence (forensic medicine), and special laboratory work as hereinafter provided.

Qualifications for Graduation.—Candidates for graduation, in addition to the usual requirements of medical colleges, must have attended three courses of lectures of not less than six months each, in three separate years; must have dissected in two courses, and attended two courses of clinical or hospital instruction; and must have attended one course in each of the special laboratory departments, to-wit: 1. Histology and Bacteriology; 2. Chemistry; 3. Operative Surgery.

These requirements shall not apply to any student who has received a course of medical lectures prior to September 1, 1893.

Yours, etc.,
W. T. Briggs.
G. C. Savage.

HEALTH DEPARTMENT.

No. 301 Mott St.
New York, December 13, 1892.

Hon. Chas. G. Wilson,
President Health Department.

Sir:—I have the honor to submit the following report of the pathological and bacteriological work of this Department during the outbreak of cholera in this city which occurred during September of the present year.

In this work I secured the coöperation of Dr. Edward K. Dunham of the Carnegie laboratory, who has had large experience in biological work connected with Asiatic cholera at the Hygienic Institute in Berlin, and I desire to acknowledge here my great indebtedness to him for biological investigations in this connection.

As bearing upon what is to follow, I desire to direct attention to certain features in the diagnosis of Asiatic cholera. It is admitted by all clinicians of experience that a differential diagnosis between sporadic and Asiatic cholera cannot be made on the clinical history alone. In the absence of an epidemic of Asiatic cholera, or the proof of direct exposure to Asiatic cholera, no one is justified on the clinical history alone in making a diagnosis of this disease. In the beginning of an epidemic of Asiatic cholera the first cases are always doubtful cases, and often their true nature is not recognized until the disease has become epidemic.

It is not very unusual to see cases of sporadic cholera presenting the exact clinical picture which is presented in the severest types of epidemic cholera, and on the other hand, it has often been the testimony of all observers in the recent epidemic in Europe that frequently epidemic cholera takes such a mild form, and resembles so slightly the severest types of the disease, that any suspicion as to its nature would not be aroused, were it not for the existence of the epidemic or the results of biological examinations.

In 1884 the German Government sent a commission, of which Robert Koch was the head, to Italy, Egypt and India, to study Asiatic cholera, and to determine if possible its cause. A peculiar organism was found in the intestinal contents and in the intestinal discharges of cases of cholera, occurring in the epidemics in Italy and Egypt, and also in India, where the disease is endemic. This organism, because of its curved form, was originally called the cholera comma bacillus, but is more properly called the cholera spirillum. Koch showed by his investigation that this organism was present almost in pure culture in the intestinal contents and in the intestinal discharges from cholera patients during the height of the disease, that it bore a definite relation to the course of the disease, appearing with severe symptoms and disappearing as severer manifestations passed away; that it was never found in any other disease, and that it might be cultivated in various substances outside of the living body.

Several other microörganisms were afterward described by other observers (one of which occurs in the human mouth, another in a form of sporadic cholera, a third in stale cheese), which resemble very closely in their morphological appearance the cholera spirillum. But when all the biological characteristics of these various organisms are considered, they can with great certainty and ease be differentiated from each other.

It is now admitted by all prominent bacteriologists of the world, so far as I am aware, that the spirillum of Koch is absolutely characteristic and pathognomonic of Asiatic cholera, and that its biological characteristics differentiate it with certainty from all other microörganisms. When this organism is found, the diagnosis does not remain longer a question of opinion, but becomes a scientific fact, regarding which there can be among competent observers no difference of opinion. To determine the nature of the organisms, however, it is necessary to not merely examine microscopically the intestinal contents or discharges, but to isolate and cultivate the spirillum in suitable media, and to study its characteristics. This process requires for the identification of the cholera spirillum in different cases, according to the conditions, from two to four days.

The second occasion in the history of cholera epidemics in any part of the world in which biological examinations were practically resorted to for the diagnosis and exclusion of this disease, was in the cholera epidemic, which occurred at the York Quarantine Station in 1887. Dr. William M. Smith, then Health officer, brought to me culture tubes inoculated from the intestinal contents of a child who had died with what had apparently been cholera morbus. The vessel from which the child had been removed, was supposed to be free from infection, although she had sailed from an infected port. Dr. Smith requested an opinion as to whether the disease which caused death was sporadic or epidemic cholera, and offered to hold the vessel until the question was determined. The examination by three independent observers (Dr. Prudden, Dr. Weeks and myself) showed at the end of forty-eight hours that the disease was Asiatic cholera. Four hundred immigrants were then removed from the vessel, and several days later a number of other cases occurred among them. Asiatic cholera was then only excluded from New York City by reason of the biological examinations.

In view of the above facts, the importance of biological examinations in the diagnosis of Asiatic cholera is, it seems to me, at once apparent.

The first case referred to me for investigation was that of a laborer, Chas. McAvoy, age 32, who died on September 7, after an illness of about thirty-six hours' duration. He had suffered from severe watery diarrhœa and vomiting, accompanied by persistent cramps in the abdomen and limbs,—collapse and death followed. This case was reported to the Health Department by physicians in attendance as probably one of Asiatic cholera.

At the autopsy, such lesions as may be found in cases of death from both sporadic and epidemic cholera were present. In the absence of any evidence of exposure to infection from epidemic cholera, and inasmuch as the microscopical examination of the intestinal contents was negative, and the anatomical lesions found in both sporadic and epidemic cholera may be so nearly identical as to make a differentiation on this ground impossible, the conclusion was reached, provisionally at least, that this was a case of sporadic cholera, and the cause of death was so returned to the Health department.

A biological examination, however, was immediately begun, and on the 10th of September the investigation had proceeded to such extent that it was considered certain that it was a case of epidemic cholera. Realizing very fully, however, how many and what important interests were at stake, an official report was not presented to the Health department until several days later, after the diagnosis had been confirmed by Dr. T. Mitchell Prudden, consulting physician to the Health department in the Division of Pathology, Bacteriology and Disinfection. A report was then forwarded to the department, correcting the original diagnosis, and reporting this as a case of epidemic or Asiatic cholera. During the month following this, nine other cases occurred in New York City, and one in New Brunswick, N. J., in which a diagnosis of Asiatic cholera was made, either on the ground of the biological examination, or, in two or three cases where no biological examinations were made, on the clinical history and the association of the patients with cases of Asiatic cholera. Twenty-four suspicious cases in all were examined biologically, in a number of instances repeated examinations being made.

Of the eleven cases of true epidemic cholera (including the New Brunswick case) nine died; among the others, which biological examination showed to be sporadic cholera, no deaths occurred. The clinical history in all the cases of true cholera was nearly the same, namely: vomiting, watery diarrhœa attended with severe cramps in the abdomen and legs, collapse, and in most cases death; the whole duration of the illness varying from six or eight hours to thirty-six hours, and in one instance to five days.

The material used for the biological examinations in most of the cases, which proved to be epidemic cholera, was obtained from the intestinal contents after death, as these cases, with one exception, occurred before or almost immediately after they were first seen by the Health Department Inspectors. In one case the intestinal discharges passed before death were examined, and in the suspicious cases (which proved to be sporadic cholera) the intestinal contents were always the material submitted for examination. In one or two instances the material presented for examination was in the form of soiled clothing. The results of the biological examinations in all the cases of epidemic cholera were identical, the same microörganism (the cholera spirillum) showing the same biological characteristics in all respects, was found. In some of the cases the cholera spirillum formed more than 90 per cent of all the microorganisms present in the intestinal contents.

The anatomical lesions and postmortem appearances in all of the cases were the same, and are so striking and so unusual in autopsies in this latitude, as to constitute in themselves strong but insufficient ground for a diagnosis.

The cultures from several of the latter cases before an official report was forwarded to the Health Department, were examined at my request by Dr. T. Mitchell Prudden, and Dr. Henry P. Loomis, and the diagnosis was confirmed by them, and their names were appended to the reports. After several cases had occurred, that there might be ample confirmation of the original diagnosis, cultures were sent to Dr. Harold Ernst, Professor of Bacteriology in the Harvard Medical School; to Dr. George M. Sternberg, Deputy Surgeon General of the United States Army (who, during the epidemic, at the suggestion of the Advisory Committee of the Chamber of Commerce, and at the request of Dr.

Jenkins, was detailed as Consulting Bacteriologist to the New York Quarantine Station); Dr. J. M. Byron, Director of the Bacteriological Division of the Loomis Laboratory (who, during the epidemic, was placed by Dr. Jenkins in charge of the hospital at Swinburne Island); Dr. Wm. M. Welch, Professor of Pathology in the Johns Hopkins University, Baltimore; and to Dr. Petri, Chief of the Bacteriological Department of the Imperial Board of Health, Germany. The identity of the organisms found in these cases with that of the cholera spirillum of Koch, was confirmed by all of these observers, and, furthermore, Drs. Byron and Sternberg confirmed the identity of these organisms with those found in the cases that occurred on the cholera infected vessels and on Swinburne Island. Unusual precautions were taken in this matter, that there might be no possibility of doubt as to the nature of the disease with which we had to deal.

The postmortem appearances and the anatomical lesions in the cases of Asiatic cholera, eight in number, in which autopsies were performed, were very striking and were practically indentical. The face had a peculiar drawn expression, the cheeks and eyes were much sunken, and the cheek bones were very prominent. The extremities of the nose, fingers and toes were shriveled and often cyanosed. The extremities (arms and legs) were semi-flexed, with the toes drawn under and the fingers clenched, rigor mortis was very much marked, and in some cases the temperature postmortem remained high for some hours. On opening the abdomen, the coils of intestines presented a peculiar rosy tint, which was especially marked in the coils of the ileum. The small intestines especially were, as a rule, markedly distended with fluid contents. All of the parenchymatous organs showed cloudy swelling and appeared congested. The brain and its membranes were also congested. The blood everywhere was fluid, or showed only a few soft, dark clots.

BACTERIOLOGICAL EXAMINATIONS IN SUSPECTED CHOLERA CASES, SEPTEMBER AND OCTOBER, 1892.

Number.	Sample Received.	Character of Sample.	Direct Microscopical Examination.	Culture Results.	Rel. Prop. of Cholera Bacilla to Total No. of Bacteria.	Results Reported.	Remarks.
1	Sept. 7	Intestinal contents .	Inconclusive	Cholera . . .	About 20 per cent.	Sept. 13	Died Sept. 7.
2	Sept. 9	" " .	" "	Not cholera .	. . . .	Sept. 11	Autopsy by Dr. H. P. Loomis, who reported death as due to meningitis.
3	Sept. 11	Cloth stained with dejecta	Negative	" " .	. . . .	Sept. 14	Died Sept. 10.
4	Sept. 11	Intestinal contents .	"	Prob'y cholera	. . . .	Sept. 14	Body had been embalmed before autopsy. Report based on next case (No. 5).
5	Sept 12	Dejecta	Cholera spirillum present.	Cholera . . .	About 100 per cent	Sept. 14	Died Sept. 11. Wife of Wm. Wiegmann (No. 4).
6	Sept. 12	Intestinal contents .	Inconclusive	" . . .	Abundant	Sept. 14	Died Sept. 11.
7	Sept. 14	" " .	" "	" . . .	. . . .	Sept. 16	Died Sept. 13.
8	Sept. 15	Vomit	" "	Not cholera .	. . . .	Sept. 17	
9	Sept. 15	Cloth stained with dejecta	Negative	" . . .	. . . .	Sept. 17	
10	Sept. 19	Dejecta.	. . . .	Cholera . . .	. . . .	Sept. .	Died Sept. 23.
11	Sept. 19	Cotton and clothing soaked in dejecta and dirty water . .	Not made.	" " .	. . . .	Sept. .	Died Sept. 18. Examination made at request of authorities of New Brunswick, N. J.
12	Sept. 19	Intestinal contents .	Inconclusive.	" . . .	. . . .	Sept. .	Died Sept. 18. Stoker on S. S. Nevada.
13	Sept. 21	Dejecta.	Not made	Not cholera. .	. . . .	Sept. 23	
14	Sept. 21	Vomit.	"	" " .	. . . .	Sept. 23	
15	Sept. 21	Dejecta	"	" " .	. . . .	Sept. 24	
16	Sept. 21	"	"	" " .	. . . .	Sept. 24	
17	Sept. 21	Intestinal contents. .	"	" " .	. . . .	Sept. 23	
18	Sept. 22	Dejecta	"	" " .	. . . .	Sept. 21	Second sample, case No. 16.
19	Sept. 22	"	"	" " .	. . . .	Sept. 24	Second sample, case No. 15.
20	Sept. 23	"	"	" " .	. . . .	Sept. 21	Second sample, case No. 13.
21	Sept. 26	"	"	" " .	. . . .	Sept. 30	
22	Sept. 26	"	"	" " .	. . . .	Sept. 30	
23	Sept. 28	"	"	" " .	. . . .	Sept. 30	Second sample, case No. 22.
24	Sept. 28	"	"	" " .	. . . .	Sept. 30	
25	Sept. 28	"	Inconclusive	Cholera. . . .	About 30 per cent.	Oct. 1 .	Died Sept. 29.
26	Sept. 29	Intestinal contents .	" "	" " .	About 88 per cent.	Oct. 1 .	Died Sept. 29. Second sample, case No. 25.
27	Oct. 4 .	Cloth soaked with dejecta	Not made	Not cholera. .	. . . .	Oct. 8 .	
28	Oct. 5 .	Stomach contents . .	"	" " .	. . . .	Oct. 8 .	Second sample, case No. 27.
29	Oct. 5 .	Intestinal contents .	"	" " .	. . . .	Oct. 8 .	Third sample, case No. 27.
30	Oct. 7 .	" " .	"	" " .	. . . .	Oct. 9 .	
31	Oct. 7 .	Stomach contents . .	"	" " .	. . . .	Oct. 9 .	

The mucus membranes of the stomach and intestines presented few changes to the naked eye, excepting marked prominence and swelling of the patches of Peyer and the solitary follicles in the lower part of the ileum. The intestinal contents showed in all cases a striking absence of biliary coloring matter, or anything resembling ordinary fæces. The intestinal contents were usually large in amount, had a gruel-like consistency, and a slightly pinkish hue. If placed in a vessel and allowed to stand some hours, a white sediment formed, leaving an almost clear supernatent fluid having a pink tinge. The sediment was found on microscopical examination to be made up largely of desquamated epithelial cells from the mucus membrane, mucus, micro-örganisms, and granular detritus.

The bladder was usually empty. In a few cases there was a marked peculiar dryness of all the organs.

The postmortem appearances and the anatomical lesions, together with the absence of any sufficient anatomical cause for death, produce a picture that is unlike that seen in any other disease, excepting those comparatively rare cases of sporadic cholera, which present the same clinical histories.

In my annual report to this department, I shall give a description of the method employed in the biological diagnosis of Asiatic cholera.

A table is appended giving the important data regarding the specimens which were examined bacteriologically.

Copies of the letters received from the different bacteriologists who have examined the cultures, are also appended. Respectfully submitted,

(Signed) HERMAN M. BIGGS,
Chief Inspector,
Division of Pathology, Bacteriology and Disinfection.

CLEVELAND, O., Dec. 1, 1892.

HON. TOM. L. JOHNSON AND HON. V. A. TAYLOR, MEMBERS OF CONGRESS FROM THE 20TH AND 21ST DISTRICTS OF OHIO.

Gentlemen:—The dangers to be apprehended the coming year from cholera, and every year from yellow and typhus fevers, and other fatal diseases which may be imported from abroad, are such as to cause all good citizens anxious concern. The magnitude of the work of guarding our National frontiers against the importation of infectious and contagious diseases, the efficiency of quarantine if thoroughly and properly applied, the fact that the people in the interior are no less interested than those upon the borders of the country, and the further fact that the States acting separately are unable to properly establish and enforce efficient quarantine; all these considerations point to the conclusion that the general *government* should assume control of coast and border quarantine. The present organization and equipment of the Marine Hospital service and the excellent work heretofore done by that service are evidence, in our opinion, that the Marine Hospital Corps is amply able to enforce quarantine if its powers are sufficiently enlarged and adequate funds are placed at its command. Neither the present powers of the Marine hospital service, as we understand them, nor such appropriations as have heretofore been made are at all adequate to meet the present emergency. We, therefore, your constituents and members of the Cuyahoga County Medical Society most earnestly request you to use your utmost endeavors to secure action by Congress early in the present session upon the matters herein set forth. To accomplish the desired ends of such legislation early action by Congress is a necessity in order that time may be given to prepare for the work. In thus urging National Quarantine we do not fail to recognize the efficient work of the Health authorities of New York City during the present year. Indeed the success of local quarantine at the Port of New York and other sea-ports but emphasizes the need of National quarantine to the end that all points upon our borders may be guarded with equal efficiency, and, as this is a matter which concerns the whole country, it is but just that the whole country should bear the burden of expense. We would also urge upon your attention at this time the obvious fact that preventive medicine is so related to internal conditions and to foreign immigration—in short, to the "general welfare" and is of such importance, magnitude and dignity that the general government should no longer neglect to give it proper recognition. Either the powers of the Marine Hospital Service should be so enlarged as to meet the requirements, or a Department of Public Health should be established and ample means provided to enable such department to perform its legitimate duties.

We earnestly hope that the views above set forth may coincide with your own and that you may earn the lasting gratitude of your constitutents and of the whole country by pushing forward the cause of public health.

Rspectfully submitted,

W. J. SCOTT, M.D.
W. A. KNOWLTON, M.D., } *Committee.*
L. B. TUCKERMAN, M.D.

ISAAC V. HIMES, M.D., *President.*
JULIUS WOLFENSTEIN, M.D., *Secretary.*

MISCELLANY.

DR. RICHARD H. DAY died at Baton Rouge, La., December 4, 1892. He was born at Bladensburg, Md., June 9. 1813.

AT the annual "business meeting" of the Washington Obstetrical and Gynecological Society, held Oct. 21, 1892, the following officers were elected for the ensuing year: President, Dr. D. W. Prentice; vice-presidents, Dr. H. L. E. Johnson, Dr. H. D. Fry; recording secretary, Dr. G. Wylie Cook; treasurer, Dr. Geo. Byrd Harrison; corresponding secretary, Dr. W. Sinclair Bowen.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from December 10, 1892, to December 16, 1892.

Lieut.-Col. William D. Wolverton, Deputy Surgeon-General U. S. A. is relieved from duty at Ft. Schuyler, N. Y., and will report in person to the commanding officer, Watervliet Arsenal, West Troy, N. Y., for duty at that arsenal.

First Lieut. Charles Willcox, upon the recommendation of the Medical Dept. of California, will report to the commanding officer, Presidio of San Francisco, for temporary duty at that post, until the departure from Angel Island, Cal., of Major William H. Gardner, Surgeon, when he will proceed to Angel Island, and report to the commanding officer of that post for temporary duty.

Capt Adrian S. Polhemus, Asst Surgeon U. S. A., is hereby granted leave of absence for two weeks on surgeon's certificate of disability, with permission to apply for an extension of two weeks.

OFFICIAL LIST OF CHANGES in the Medical Corps of the U. S. Navy, for the Week Ending December 17, 1892.

P. A. Surgeon E. R. Stitt, from receiving ship "Franklin" and to hospital, Norfolk, Va.

P. A. Surgeon J. F. Keeny, from Naval Hospital, New York, and to the U. S. S. "Ranger."

P. A. Surgeon T. A. Berryhill, from U. S. S. "Ranger" and to the Fish Com. Str. "Albatross."

P. A. Surgeon F. W. F. Wieber, from the Fish Com. Str. "Albatross" and granted one month's leave.

Asst. Surgeon G. T. Smith, from Coast Survey Str. "Hassler," proceed home and wait orders.

Asst. Surgeon F. G. Brathwaite, from the U. S. S. "Fern" and to the U. S. S. "Chicago."

Asst. Surgeon J. S. Hope, from the receiving ship "Franklin" and to the U. S. S. "Fern."

Asst. Surgeon J. M. Whitfield, from the U. S. S. "Chicago" and granted one month's leave.

OFFICIAL LIST OF CHANGES of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the eight weeks ended December 10, 1892.

Surgeon George Purviance, detailed as chairman of Board to consider changes in uniform. December 6, 1892.

Surgeon W. H. H. Hutton, relieved from duty at Cape Charles Quarantine, to rejoin station. November 29, 1892.

Surgeon John B. Hamilton, granted leave of absence for six days. November 18, 1892.

Surgeon H. W. Sawtelle, granted leave of absence for seven days. November 9, 1892.

Surgeon H. W. Austin, detailed as member of Board to consider changes in uniform. December 6, 1892.

Surgeon G. W. Stoner, granted leave of absence for fourteen days. December 9, 1892.

Surgeon John Godfrey, to proceed to the City of Mexico on special duty. November 22, 1892.

Surgeon Fairfax Irwin, to proceed to Europe on special duty. November 22, 1892.

Surgeon F. W. Mead, detailed as recorder of Board to consider changes in uniform. December 6, 1892.

Surgeon H. R. Carter, relieved from duty at Cape Charles Quarantine, to rejoin station, October 20, 1892. Relieved from duty at Cincinnati, O.; assigned to duty at Norfolk, Va. October 26, 1892.

P. A. Surgeon C. E. Banks, granted leave of absence for fifteen days. October 24, 1892.

P. A. Surgeon A. H. Glennan, granted leave of absence for thirty days. October 26, 1892.

P. A. Surgeon W. D. Bratton, granted leave of absence for thirty days. November 10, 1892.

P. A. Surgeon J. O. Cobb, granted leave of absence for sixteen days. December 7, 1892.

P. A. Surgeon G. M. Guiteras, relieved from duty at Gulf Qurantine, assigned to temporary duty at Balitmore. Md. December 1, 1892.

P. A. Surgeon H. D. Geddings, to report in Washington, D. C., for special temporary duty. November 30, 1892.

Asst. Surgeon S. H. Hussey, to proceed to South Atlantic Quarantine for temporary duty. October 26, 1892.

Asst. Surgeon J. C. Perry, when relieved at Norfolk, Va., to rejoin station at Mobile, Ala. October 26, 1892.

Asst. Surgeon G. B. Young, granted leave of absence for twenty-one days. October 27, 1892.

Asst. Surgeon W. G. Stimpson, to proceed to Baltimore, Md., for temporary duty. December 5, 1892.

Asst. Surgeon C. H. Gardner, ordered to Portland, Or., for temporary duty. October 25, 1892.

Asst. Surgeon J. A. Nydegger, to proceed to Gulf Quarantine for temporary duty. December 1, 1892.

Asst. Surgeon Edgar Strayer, detailed as inspector of immigrants, port of Boston, Mass. November 22, 1892.

The Journal of the American Medical Association

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ORIGINAL ARTICLES.

THE UNITED STATES NAVAL RATION.

Read in the Section of Physiology and Dietetics, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY SURGEON C. A. SIEGFRIED, U. S. N.

In accordance with the desire of the American Medical Association, made known to Surgeon-General J. Mills Browne of the Navy, by the officers of the Section on Physiology and Dietetics, I have the onor to submit the following contribution on the S. Naval Ration and the system of dietetics comonly in use in the Naval Service.

You desire to know how we nourish and subsist he American Naval man, upon what principles and scale his dietary is composed, the nutritive and dynamic values of the articles composing it, and the general results both to himself and his country. As the problem implies some retrospection, and as the principles and knowledge guiding us are universal, I beg to be allowed to give some account of the present *systematic training of vast bodies of men for armies and navies, and the bearing this has on the* hygiene and development of whole nations and millions of human beings.

The *progress of the arts and sciences* in recent times has had its due influence in the evolution of the present complex military and naval rival organizations of civilized nations. These armed bodies [illegible] the Continent of Europe, where the play of political and economic problems and forces is greatest, unhappily absorb the bulk of the genius and talent of mankind, and the training and disciplining for effective use at the least cost of these hosts of men has become the chief end and aim of national ambitions. It has called into existence, aside from the material constructions and equipments of destructive offense and defense, a vast amount of practical skill and the highest arts of scientific hygiene, in producing and conserving the physical adaptability and stamina of men by the use of proper clothing, housing, food and water supplies, periods of work and rest, and the cultivation of their capacities physical and mental. In these services our profession is mostly concerned with disease prevention and waste of life, and under very favorable circumstances, for evil results quickly make themselves felt, and we have to deal here with the causes of more losses than the casualties of the most sanguinary wars in history. A bad dietary and tainted water quickly render a force of men useless, whilst comparatively few are killed in battle. There has thus been produced a very costly, highly efficient and intensely destructive agency, and no department of science and experience is left unransacked to promote these ends.

But as all these things are but inanimate contrivances and inventions needing *for their essential uses the touch of man, it is our* part to produce and preserve to the extent of all his powers the more highly endowed and delicate human machine, so that he *may not fail* in his part in the hour of trial, that waste of life and loss of treasure may not be the final result.

Vast national forces, in countries where every able-bodied man must serve his allotted time with the army or navy according to his place in society, are in reality vast schools, and by many publicists and hygienists are looked upon as blessings in this sense. The ignorant peasant and lowly laborer are taken from often barbarous surroundings, cleansed, vaccinated, and set upon a humane basis of existence more favorable in every respect for *their improvement.* They are removed for a time from the deadening labor of the fields and factory, the mind is opened, they are trained not only to *arms but in the* elements—if no more—of a *common* education—by their associations and daily tasks. His body is cultivated in all parts, including his mind, for obviously this human machine is made more efficient and expert as a war factor in proportion as his mental and physical development has advanced.

It is said with justice that since universal military or naval service has come into effect in European countries, many problems relating to sectional antipathies, as well as the causes of disease and spread thereof influencing whole provinces, are being removed. This is notably so in Italy, and is a powerful factor in the regeneration and unification of that country. So from the standpoint of hygiene, and as medical men, it cannot be an evil that these hosts of human beings are so collected together, groomed, trained and fed as science dictates; for once implanted in them by the power of the State, these habits and impressions must to a great extent remain with them on their return to their former pursuits and civil occupations; and in so much do they and the community to which they belong benefit. It is not too much to say that this universal service is in Europe a great uplifting agency, and on the other hand wars are happily not more frequent than *under* previous conditions.

In those early periods in history when *men fought* their battles in rude boats propelled by manual labor, a rude commissary effort was carried on by the warriors' servants and differing not essentially *from his* daily fare ashore, whilst the absences from bases *of* supply were short.

In the course of time as the art of navigation and the knowledge of astronomy and geography grew, explorers traversed all seas, and in making long voyages food supplies became progressively less fresh and full, and consisted mainly of the coarser cerealia, dried and salted meats, spirits, and some live *stock.* Coincident with these long absences from land and fresh food grew the list of deaths, directly and indirectly from these deprivations, and chiefly from the lack of those little appreciated food elements in a fresh state derived from succulent plants and animal flesh. So that accounts of early voyages are often but doleful narratives of gradually increasing suffering and death dependent upon these deprivations and length of time at sea. The losses from scurvy in the best appointed navies up to 1840, comprise the bulk of the mortality tables; and in the commercial marine the disease still occurs, due usually to the rapacity of owners in fitting out ships with insufficient and adulterated food supplies. Scurvy among seamen, and even on land, up to the end of the last century, has been a classic theme in the study of causes and the sequelæ of improper and insufficient dieting, and the present appreciation of the disease may not inappropriately be referred to here. It has absorbed the attention of naval medical men because of the magnitude of the losses in life, exceeding in the past that from all other causes combined.

It was not uncommon for a naval vessel in three years of remote foreign service to lose a sixth or even more of her crew, and in the voyages of discovery a century and a half ago, often but a handful returned of the hundreds who originally ventured, and these misshapen, brutalized specimens of humanity. To the immortal credit of Captain Cook, he was the first to furnish the experimental proof on a large scale of the value of succulent fruits and vegetables and their acid juices in preventing and curing scurvy. This occurred in 1772–75, during his second voyage, when with a crew of 118 men he circumnavigated the globe, and brought all but four home with him—three dying from accident and one from consumption. This memorable event, and successful dieting, for which he received the medal of the Royal Society, took place only thirty years after Anson's voyage of discovery, in which out of 900 men he lost 600 from scurvy in three years. Yet like all reforms in hygiene, the lessons of Cook's experience and the pleadings of naval surgeons had but little effect, and scurvy figured heavily in naval mortality tables up to fifty years ago. Cook's vessels in 1772 were supplied with malt, sour krout, salted cabbage, "portable broths" and soups, mustard, marmalade of carrots, inspissated juice of wort and beer, and as much as possible of live stock. He knew the value of fresh berries, he cooked grasses and greens with the dry legumes and cereals, he used the fresh flesh of all animals and birds, and he even distilled sea water in times of scarcity. To produce dryness and to fumigate between his narrow decks he used the fire and smoke from portable iron baskets. By these various means he successfully traversed (in his ship the "Resolution," of less than 400 tons burden) the seas from the latitude of England to south latitude 71°, in the tropics, and antarctic ice regions, alternately, and encircled the globe.

Scurvy pathologically is characterized by the effusion of semi-organizable fibrinous material in the tissues of the gums, between the straie of muscles, and periosteum and bone, by ecchymoses, and blanched tissues. In the blood the red cells are diminished, its albumen and fibrin are relatively increased, and there is no great decrease in the amounts of potash and other salts. Some have held that potash salts are deficient in scorbutic diets and in the urine of those ill with the disease, but this is counterbalanced by the fact of success following not potash loaded aliment, but the prompt curative effect of substances holding naturally in solution and in the fresh state the organic salts of fruits and succulent vegetables, as the citrates, lactates, tartrates, etc., best exemplified in lime juice, potatoes, acid vegetables and fruits. Ralfe concluded that the primary alterations in scurvy depended on an alteration between the various acids, organic and inorganic, and the bases found in the blood, by which, *a*, the neutral salts, as the chlorides, are either increased relatively at the expense of alkaline salts; or, *b*, that these alkaline salts are absolutely decreased. Thus is produced a "normal" alkalinity of the blood, and he suggests that this diminution produces the same results in scurvy patients as happens in animals when their blood is reduced in alkalinity by injecting acids or feeding acid salts; namely: dissolution of blood corpuscles, ecchymoses and blood stains on mucous surfaces, and fatty degenerations of muscle and secreting gland cells. The disease is a maximum expression of malnutrition dependent on chemical alterations of the blood and fluids of the body, and on specific changes in the normal metabolism of protoplasm, and its study bears a direct and suggestive relation to our subject—the proper nutrition of the body by well proportioned diet.

Though full generous food stuffs in moderately fresh state do prevent scurvy, yet it occurs when from unforeseen circumstances the diet fails in some of these requirements, and it is customary to provide mariners with antiscorbutics properly so-called. The value of lime juice was known from 1573 (Solomon Albertus), 1593 (Sir Richard Hawkins); and in 1795, through the importunity of Blane, it was regularly issued to the English navy. It is not in the regular U. S. Naval ration. In the English Arctic experience in 1873–75, it was found that scurvy occurred when lime juice was omitted, even though pemmican and preserved potatoes were used. From Kane's time raw meat is of known value. It is to the absence of the substances of the fourth group of aliments that scurvy is due, and these include those salts and bodies in tissue solutions to which much of the catalytic and dialytic properties of organic fluids, and exchanges in normal nutrition or metabolism are due. To this group, and with variety of food elements as a whole, are probably also due the more thorough elaboration of the digestive ferments and enzymes. There does not seem to be in scurvy diets any deficiency of sodium, iron, lime, magnesia, or the salts of potash or phosphoric acid, when it is considered how much phosphoric acid there is contained in the cerealia and meats, and yet the disease occurs. The same can be said of sulphur in relation to meats and the leguminosæ.

There remains then only the inorganic elements, the salts and the combinations of alkalies with those which form carbonates in the system, viz.: lactic, citric, tartaric and malic acids. The salts containing them are at first neutral, afterwards alkaline, from their conversion into carbonates; they then play a double part, and moreover, when free and in the presence of albumen and sodium chloride, these acids have the peculiar power of precipitating albumen, or perhaps of setting free hydrochloric acid. Without these carbonates there is likely to be an excess of acids in the system, from the production of phosphoric, sulphuric, uric and hippuric acids in ordinary functional activity, and the only alkali in the body is the formation of ammonia; hence the importance of these antacids. Yet the administration of carbonates of the alkalies does not cure scurvy, but it is the particular action of these organic acids which in practice prevents and cures it.

Happily this scourge has disappeared from mortality lists in navies, yet from this grade of extreme malnutrition to the less appreciated faulty body conditions and manifest ill-health, occurring both ashore and afloat, is not many steps, whether among the poorer laborers of the fields and factory, or in luxurious homes. The tea and bread diet of the factory hand, the ham and hominy of the farmer, the confection-crammed child of wealth, and the heavily loaded club man—whose tissue cells by overstimulation go from cloudy swelling to fatty degeneration —all these exemplify grades of malnutrition and consequent disease in various forms. The lack of correct nutrition is keenly felt in family lines, in "diatheses," and in body states comprised in classes of disease wherein there is vulnerability of certain tissues, and irregular functioning leading to early dissolution. Whether we use the terms meaning observed facts such as phagocytosis, chemotaxis, and the anti-toxic properties of normal tissue cells and blood serum, these disease-resisting properties are inherent to functionally active well balanced organizations under conditions of correct nutrition in the larger sense. The well known nurtureless milk from the breast of a poorly fed woman is not alone deficient in nutrients but contains at times (recent observers in *Virchow's Archives*), the microörganisms of suppuration.

The cravings for quantity of the glutton, the strange perversions in kind and quality, the excesses of the orgie-loving seaman, are of deeper significance than is ordinarily accorded them. By long custom and necessity existence can be endured on marvellously altered food, both in quantity and quality, yet there grows with such conditions abnormal sense and intellection faculties, persistence follows from uncontrollable and ineradicable habit; and finally, there is perpetuated a blighted, low human type, prone to crazed excesses, criminalities and abbreviated existence. Such populations are to be seen in all countries, in the mining and factory regions of the foremost nations as well as among the older oriental nations and barbarous peoples. Laws based upon philanthropy and knowledge of food requirements are of slow growth, due to the difficulty of dealing with the selfish interests and unconscious ignorance of the vast majority of mankind. Peas may not be greened with copper sulphate for use in France, but may be so treated for use in other countries, the latter clause being added by the power of selfish interest. Finally we are justified in saying that disease may be produced by alterations in quantity, excess or deficiency; by imperfect conditions of digestibility, state of integrity, preparation and cooking; and by special characters of quality.

The steps leading to the present recognized principles of healthful dieting reach back to the time of Aristotle, who said that the organism requires food supplies for three purposes—growth, heat production, and to make up for loss by bodily excreta. He thought that the formation of heat took place in the heart by a process of concoction, the heat so formed being distributed to all parts of the body by means of the blood, while the respiration was regarded as a cooling process. Galen compared the metabolic processes to the phenomena going on in a lamp; the blood represents the oil, the heart a wick, and the lungs a fanning apparatus. Van Helmont and the intro-chemical school argued that the metabolic processes are fermentations, whereby the food is mixed with the juices of the body. Since the middle of the seventeenth century—the time of Boyle—the knowledge of metabolism has followed the development of chemistry.

A. V. Haller regarded heat as due to chemical processes—the food continually supplying the waste which is excreted from the body. After the discovery of oxygen, Lavoisier formulated the theory of combustion in the lungs, whereby CO_2 and water were formed. Mitscherlich compared the decomposition processes in the living body with putrefactive processes. Magendie was the first to emphasize the difference between nitrogenous and non-nitrogenous foods, and he showed that the latter alone were not able to support life.

The greatest advance was made by the illustrious Liebig, who in fact laid the foundation of our present knowledge, though his division of foods into the plastic and respiratory or oxidizing foods is no longer tenable. The labors of the French Gelatine Commission have also been of use in the studies of nitrogenous foods. The more recent and accurate knowledge of the chemico-physiological processes of normal metabolism has been chiefly gained by the labors of the Munich school of investigators, Pettenkofer, Voit and others. Proteid tissues are not alone the result of proteid food, and the accumulation of fat in the body is not altogether due to excessive consumption of fats and carbohydrates. Contrary to the former general belief it is now known that the nitrogenous tissues are not used up during hard labor any faster than when at rest, and that increased muscular exertion is attended by increased consumption of stored up fat. We may liken the human body to a machine composed mainly of proteid tissues, keeping its integrity by supplies of nitrogenous foods and its working capacities by non-nitrogenous foods; and of these latter fat is of peculiar conserving and economic importance. Further progress in the metabolism of protoplasm, as also the causes of the phenomena in disease processes resulting from changes in chemical constitution of tissues, must in great part come from the workers in the field of chemistry. It is realized that the whole class of unstable proteids, emulsions, and nutritional solutions from food digestions, are difficult to elucidate at their distinctive values, and here the grasp is frequently at shadows in the search for substance. May not this apparently insurmountable barrier exist in virtue of the vital principle—the unceasing molecular change in living tissues?

In a public service like the Navy, with careers spent away from the centres of learning and research, and with barely sufficient room on shipboard for the common necessities of the animal man, it is not expected of us that we carry the torch. We endeavor to apply the scientific truths gained by our more fortunate brethren on shore. Since the beginning of the present century but little original work in dietetics has been done by naval men, and the writings of Lind, Blane, Trotter, and Fletcher are still the classics in the English language, and we all profit by the works of the lamented Parkes. Recent writers have however done much good wook in several directions, notably the French and Germans, but dietetics has not been given the same prominence as other conditions influencing health on shipboard. Scientific dietetics has conduced to greater economies in the French, German, and Italian navies, and they have graded the food allowances to the amount of work required. It is recognized that if men are to work or fight well they must be fed well. In our navy the subject might be further developed, not in any great additions to quantity or variety, but in the now recognized possible economic adaptations—the hardest worked to be the best fed, and changes in character in accordance with the nature of the work or service, the climate and season. From time to time changes in sea dietaries have taken place in keeping with the general increase of knowledge regarding food stuffs, and it can be said now that naval seamen as a rule actually get adequate food and the full value of their lawful allowances.

From the beginning of our national existence the laws state "All contracts and purchases of supplies for the military and naval services shall be made by or under the direction of the chief officers of the war and navy departments respectively" (July 1798). The naval subsistence was in the hands of the "pursers," now the paymasters under the direction of the Bureau of Provisions and Clothing in the Navy Department at Washington. The contract system and the lowest bidder consistent with good quality, is in vogue, surrounded by many safeguards. Supplies are advertised for with particular and full specifications in every detail of quantity, quality, packing, preservation and methods of keep, and distribution in convenient packages and portions. Stores are used within as short a time of their packing as possible, and much ingenuity is exercised in stowage, size and shape of casks and cases, and in issue.

Naval dietaries up to 1798 were truly deplorable, and that life was endured at all in working health is a marvel. But then navies, up to our times, were services of adventure, discovery, fighting and spoils, and thus attracted men; and if necessary men were impressed or forced into navies and ships. The famous mutiny at the Nore in 1797, in which several thousand British sailors took part, was due to wretched rationing, and one of their complaints was that the sailors' pound was only 14 ounces, because of the eighths subtracted from their allowances by their officers by law and custom, in fact this was the chief source of pursers salaries in those days. The daily ration then was composed of albuminous principles 4.58, fats, 3.14; carbohydrates, 12.83, and salts 1.20 ounces.

Pursers also sold stores and food stuffs, and the crews added to their diets by purchase. In those days such dietaries were common in navies, and yet great wars at sea were carried on, and courage and strength were an English sailor's characteristics. Prizes and plunder were no doubt inspiring agencies in the old sea life, and made up for lack of pay and food allowances; and armed ships did much as they pleased with other people's property, considering the constant wars, discovery voyages, and legalized piracies(?). Not infrequently noted commanders were freebooters in one hemisphere and court noblemen in the other. With the emergence of the world from the wars of the last century, navies became more and more peaceful patrols of the sea, and the chief food supplies became and now are the legal allowances—the ration. From that time on "salutary changes" were frequently made and with these came ameliorations and improvements in mortality tables; typhus fever, ulcer, dysentery and scurvy disappeared and diminished, and the sailor was no longer classed with the lowest of human beings.

In our own navy the ration has been over-hauled and changed in some direction at periods of about twenty years. When spirits was abolished in 1862, its cost (the ration) was raised from 25 to 30 cents, and it is so now when commuted. The ration, substantially as now, was in 1842 established by Congress. "The ration, shall consist of 1 pound of salt pork, with ½ pint peas or beans; or 1 pound salt beef, with ½ pound flour, and ¼ pound raisins, dried apples, or other dried fruits; or 1 pound salt beef, with ½ pound rice, 2 ounces butter, and 2 ounces cheese, together with 14 ounces biscuit, ¼ ounce tea, or 1 ounce coffee, and one gill spirits; weekly ½ pint each, pickles, vinegar and molasses."[4] As substitutes, "fresh meat 1¼ pound, for salt beef or pork; 1 pound vegetables or sour krout for the articles issued with the salt meats. 1 pound fresh bread, 1 pound flour, or ½ pound rice for 14 ounces biscuit; ½ pint wine for a gill of spirits. Spirits not allowed persons under 21 years of age; others may relinquish and receive commutation therefore." This scale was only inferior to the present one in actual values by reason of imperfect packing and preserving methods in use in those days, combined with long sea voyages. It is difficult to correctly estimate nutritive values of allowances and descriptions of the articles used at that time, and frequently years would elapse from the putting up of an article to its consumption. Hence enormous fluctuations in values.

In 1861, the law provided preserved meats and dessicated vegetables, for the first time, and the spirit allowance was abolished shortly afterwards. More latitude was given for substitution and variety. The canned and dessicated food stuffs met with little favor from the men and the suppression of Jack's grog was considered nothing short of a crime, and caused much discontent at the time. The total lack of spirit, beer, or wine, in a sea dietary is not in accord with the opinion of many hygienists and seagoing people, and the law has not improved the content with the many inexorable deprivations of sea life. This ration was satisfactorily used during the civil war. In 1872 an additional ounce of coffee and sugar was allowed for an early breakfast. Sailors so long as they have money, constantly and freely add to their daily fare from market or "bumboats," which come alongside at meal times in all parts of the world. Fruits, bread, and eggs in great quantity, are consumed in this way; and great bagnets filled with potatoes are carried to sea, in addition to their allowance. It has occurred to me that salt meats rarely in practice come up to their theoretical values, and this, with some deficiency in fats, usually due to waste in cooking, has caused the sometimes prodigious-egg consumption from bumboats. All seamen desire large rations and naturally prefer fresh food. They are also great growlers and look with suspicion upon innovations in their rations, and the best intentions are in this regard often thwarted by them.

In 1884, the Hon. Secretary of the Navy appointed a board of officers to revise and advise concerning the ration, and the present regulations date from that time. The list of articles was amplified and in many respects the food, meal hours, and methods of preservation, packing and issue, were improved, so that on the whole, while not substantially increased in quantity over that provided by law of 1861, the ration is superior to that of other naval services, and compares well with standard and model dietaries. But the nutritive and dynamic values are, according to my calculations, inferior to that of some classes of laboring men and mechanics in this country; and, it is lacking in a just proportion of elements, the fats being deficient in the common sea issues and the albuminates in the fresh issues.

Among the questions put to the '84 Board were the following: Is the ration sufficient in quantity and variety, and is it necessary to exceed present cost? Others related to preparation of supplies, commutations, and cooking. They reported that the ration was deficient in fat and nitrogenous principles, and they made appropriate recommendations. One of the most important recommendations made, the training of a class of competent cooks, was not acted upon. With us as with you ashore, the amount of waste, the difference between the amount of food material supplied and the amount consumed, is enormous, certainly as much as 25 per cent., and much of this would be prevented by better cooking. Potatoes are roughly cut to pieces not pealed, the fat of meats is boiled or burned off and becomes "slush" (common ships grease for lubrication purposes), flour is made into poor breads and indigestible "duffs," and methods of haste and ignorance, combined sometimes with sharp practices, prevail in some instances with the cooks and mess attendants. It is interesting to note that as a rule the officers—in answer to inquiries from the '84 Board—had nothing but praise for the ration in amount and nutritive value, their criticisms relating mainly to matters of detail in care, preparation and issue. On the other hand six seamen emphatically said "no, they never had enough to eat when on their legal rations," "it was not varied enough; that the salt beef was always bad; they desired better cooking facilities; and to commute 25 per cent. of ration, and with the money buy other food."

As an instance of what can be done in managing allowances of food to their best uses, Col Burnett, of the First Royal Rifles, of the English army, found his men suffering (in 1889) from lack of food, due to wretched distribution and cooking. By careful management and with no change in cost, he brought the carbon up from 4,588 grains to 4,912 grains, and the nitrogen from 276 grains to 344 grains per diem, the men being satisfied instead of suffering semi-starvation, and receiving in ounces: albuminates 4.92, fats, 2.96, and carbohydrates 16.36. It is asserted that with proper care the English army and navy allowances are amply full, and exceed the continental services in nitrogenous matter. In general the U. S. Navy ration is somewhat superior to the English naval ration in albuminates, and much superior in the same element to all European navies. Bread is the staple in continental rations, 1½ pounds being the common daily allowance, whilst ours is but 1 pound. But we excel them in meats, butter, sugar, and beverages, the more satisfying elements. Condiments are not supplied in our ration, contrary to other services, the men buying it, and they obtain salt from pork barrels.

For particularly arduous duties, or exigencies of polar service, additional and appropriate food is supplied by the government and according to the character of the service. It is now impossible to carry in modern warships great amounts and varieties of food stuffs; the conditions have changed since steam alone has become the motive power, and ships keep the sea no longer than the supply of fuel lasts rarely over a fortnight. It is also difficult to make in set terms of law a single rigid dietary for so many varying circumstances of duty, climate, and labor, so that latitude and simplicity of application are essential, the nutritive standard being kept in view. If subsistence alone were the object aimed at the rations could be graded according to the work done by individuals, and the crew of a ship could be divided into three classes, first the moderate workers, second, the hard workers, and third, the severe hard workers. But it is better and simpler in practice to have one scale on shipboard, the class of severe laborers—the firemen—could be allowed an additional third or half ration. Most foreign navies have adopted the sliding scale here indicated. The muscular exertion of the men on a modern war ship varies from writing accounts and stores keepers; watching, moving about in a certain space for hours at a time; actively attending moving machinery; drilling with small arms and great guns, to the hardest labor known—that of stoking marine engine furnaces in a closed fireroom at a temperature of from 110' to 175' F. The working life of a modern steamship firemen is given at about nine years; exhausted hearts, and chest diseases due to sudden excessive and abnormal conditions of heat and cold, combined with the strain of great labor in a confined space kill these men up prematurely. Such men require much nutrition, and in most great navies are the higher paid and fullest rationed class. The average seaman or deckman requires a less full diet, and finally about 10 per cent. need only the moderate work scale. So that an average modern warships company is composed of:

	Nutrients in Grams.			Potential Energy in Calorics.
	Protein.	Fats.	Carbohydrates.	
25 per cent. of men in severe labor, requiring	225	200	650	5407
65 per cent. of men in hard work, requiring	175	150	550	4367
10 per cent. of men in moderate work, requiring	125	125	500	3735
(Estimated model), an average of . . .	175	158	566	4507*
Present ration	157	75	549	3615

*In foot tons, 6895.

Naval apprentices for the first six months, usually spent in harbor, are subsisted at the commuted cost of the ration, 30 cts, and this supplies an ample and varied dietary. Amounts are not restricted and the fare is quite the equal of the ordinary American home table. These boys, from 14 to 18 years of age, begin the day with cocoa and milk, breakfast (with meat four days in the week) at 8. dinner at 12 (with meat) and supper at 6, the usual navy meal hours. On occasions men or boys are put on "bread and water," in confinement, with full ration every fifth day. The officers and naval cadets subsist themselves the ration being commuted. On long sea voyages they often use the regular ration and the writer (in a ships company of 300) once subsisted fairly well and without hardship for five weeks on three fourths of the ration, though the men were restless and murmured. By law, commanding officers of ships, from accident or unforeseen scarcity at sea, can curtail the food and supplies of any description. For very obvious reasons naval dietaries should be constructed upon generous principles, for an efficient naval vessel must be manned by actively strong, and intelligent men and officers; hence a model diet must lean to proteids and fresh supplies, consistent with keep and transport.

TABLE A.—U. S. NAVY. SEA OR SALT RATION. ONE WEEK'S ISSUE.

Articles.	Allowance.		Nutrients in Grams.			Mineral Matters.	Potential Energy in Calories.
	Lbs.	Ozs.	Protein.	Fats.	Carbohydrates.		
Salt Pork[1]	2	. . .	194.14	52.05	. . . . .	163.57	
Salt Beef[1]	1	. . .	115.78	.78	. . . . .	82.	
Preserved Meats[2]	4	. . .	231.33	69.40	. . . . .	32.16	
Canned Vegetables	1	2	13.77	2.01	66.33	. . .	
Rice[3]	. .	8	16.78	.90	180.07	.90	
Peas	. . .	8	60.55	3.85	127.91	6.57	
Beans	1	. . .	104.78	9.07	270.53	14.06	
Flour[3]	1	. . .	49.89	4.98	339.71	2.26	
Biscuit	6	2	433.41	36.11	2039 27	24.23	
Dried Fruit[4]	. . .	4	2.72	. . .	70.30	. . .	
Butter	. .	6	1.70	144.58	.85	5.10	
Sugar	1	12	. . .	. . .	776.33	. . .	
Molasses	. . .	8	. . .	. . .	165.79	. . .	
Cocoa	. . .	6	. . .	. . .	. . . . .	. . .	
Coffee	. . .	8	. . .	. . .	. . . . .	. . .	
Tea	. . .	1.50	. . .	. . .	. . . . .	. . .	
Vinegar and Pickles	1	. . .	. . .	. . .	. . . . .	. . .	
Total	22	1.50	1224.85	323.76	4037.12	330.85	
Daily average	3	.85	174.98	46.25	576.71	47.26	3515

[1] 18 per cent. waste.
[2] Corned beef, roast beef, and sausage meat.
Substitutes: Ham, brawn, bacon, smoked and salt fish.
[3] Or cornmeal, hominy, oatmeal.
[4] All varieties.

TABLE B.—U. S. NAVY FRESH RATION. AVERAGE DAILY ISSUE.

Articles.	Allowance.		Nutrients in Grams.			Mineral Matters.	Potential Energy in Calories.
	Lbs.	Ozs.	Protein.	Fats.	Carbohydrates.		
Fresh Meats[1]	1	4	87.68	74.18	. . . . .	4.35	
Fresh Vegetables[2]	1	4	10.71	.13	74.19	4.08	
Fresh Bread	1	.	37.71	7.71	255.37	3.98	
Flour	. . .	2.28	7.12	.72	48.53	.32	
Butter	. . .	.85	.08	21.99	. . . . .	.22	
Sugar	. . .	4	. . .	. . .	110.90	. . .	
Molasses	. . .	1.14	. . .	. . .	23.80	. . .	
Dried Fruit	. . .	.57	.39	. . .	10.01	. . .	
Cocoa	. . .	.85	. . .	. . .	. . . . .	. . .	
Coffee	. . .	1.14	. . .	. . .	. . . . .	. . .	
Tea	. . .	.18	. . .	. . .	. . . . .	. . .	
Pickles and Vinegar	. . .	2.28	. . .	. . .	. . . . .	. . .	
Total	4	5.29	143.69	105.33	522 83	12.95	3715

[1] 20 per cent. waste. Calculated from total fore and hind quarters.
[2] 18 per cent. waste. Potatoes, onions, cabbage, etc., mixed.

In the French navy the cost and kind of the ration varies from 11 cents to 27 cents according to the position of the man. Commutation is not common in any European navy, the men being fed closely and paid on a similar plane, whilst their dietaries partake of the national characteristics. Maccaroni figures in the Italian, sour krout in the German (and it is unsurpassed as a sea vegetable), brandy in the French, and oil, wine, cheese and beer, in most of their lists. Meats are rather limited, and bread and biscuit large—to 1½ pounds in most of them. The Chilians allowed their men recently 2 pounds meat daily. The Germans give more food in the first three months of a sea cruise, thus very properly supplying a common craving among the younger men. These services also arrange their dietaries according to station, at home or abroad, the climate, the zones and seasons of the year. In public services it is not considered the part of a government to supply every requisite of luxury common to an elaborate dietary, but to subsist each individual safely and well, so that his capacities may be fully kept up.

TABLE B[1].—THE DAILY AVERAGE U. S. NAVAL RATION.

The mean of all food supplies	Protein	157.34
	Fats	75.59
	Carbohydrates	549.77
	Mineral Matters	30.10
	Potential energy in calorics	3615
	" *foot tons*	5531

TABLE C.—ESTIMATED FOOD CONSUMPTION OF AMERICAN NAVAL SEAMEN.

	Nutrients in Grams.			Potential Energy in Calories.
	Protein.	Fats.	Carbohydrates.	
Average general ration, U. S. Navy	157.34	75.79	549.77	3615
Additional by purchase	50	50	50	
Total	207.34	125.79	599.77	4480
U. S. Naval Apprentices, harbor station	178	108	603	4210
U. S. Navy punishment ration, "bread and water"	37.71	7.71	255.37	1273

TABLE D.—*AMERICAN DIETARIES.

	Nutrients in Grams.			Potential Energy in Calories.
	Protein.	Fats.	Carbohydrates.	
Mill operatives, Massachusetts	114	127	504	3715
Average of 71 persons, Mass. Labor Bureau	119	202	552	4625
Two Boston boarding houses, teamsters and marble workers; severe labor	217	364	988	8377
Well-paid Connecticut machinists in boarding house; food supplied	126	188	426	4010
" consumed	103	152	402	3490
College football team, food eaten	181	292	557	5740
Professional men, college students; food actually consumed	126	152	489	3926
Club men	140	158	533	4105
Average European professional men	114	. . .	. . . . . .	2670
Average American professional men	126	. . .	. . . . . .	3925

* From works of Prof. Atwater.

TABLE E.—EUROPEAN DIETARIES.

	Nutrients in Grams.			Potential Energy in Calories.
	Protein.	Fats.	Carbohydrates.	
English Navy, 1720	148	102	415	3258
" " at present (MacDonald)	156	155	603	4544
" naval apprentices	115	111	563	3822
French Navy, from	115–150	45–100	513–550	
Italian " similarly.				
German " home station	141	113	650	4293
" " sea cruising	151	95	600	3962
Bavarian workmen	122	34	570	3150
" brewers	149	61	744	4270
Munich mechanics, well paid	151	54	479	3085
Lumbermen, Bavarian Alps	130	292	724	6215
Very poor German farmer	83	17	573	2845
German professional men	107	105	280	2565
" Army, peace	114	39	480	2800
" " war	134	58	489	3095
" " extraordinary war	192	45	678	3985
" " war of 1870 and '71	157	285	331	4650
Swedish mechanics	134	79	523	3435
English work people, poor, hard labor	78	41	458	2580
" " " better class, hard labor	144	83	631	3950
English royal engineers (Playfair)	145	85	629	3564

The modern compact foods for troops, and composed of the essential nutrients in convenient shapes are now common in Europe, beginning with the famous pea sausage of the Germans in 1870–71. They are used in sudden rapid movements in sections of country bereft of food supplies; each man carrying his own supply for from three to four days, and a single wagon transports an infantry company's supply for a week. I present here a specimen recently made in Russia. It is made up in small oblong biscuits ¾ x 1½ inches, and the daily food allowance proposed in this form is of:

Iron Ration, Russian Army
Wheat cake, 200 grams.
Condensed vegs., 200 grams.
Burnt coffee, 25 grams.
Salt, 25 grams.

The tables following give in detail the U. S. Naval food supplies; the rations actually issued, at sea and in port, according to regulations. I have also added some selected standard dietaries, European and American, and specimen dietaries from several countries and our own, of people in many occupations, for comparisons. The data I have used for calculating the nutrient and dynamic values are mainly from the works of Prof. W. O. Atwater, (to whom I am under great obligations), Edward Smith, and Parkes, and I have endeavored to select those most in accord with the articles of the ration as familiar to me in a naval experience of twenty years. The results are, however, only approximative, and greater accuracy could be obtained by actual weighing of amounts eaten. In conclusion I would add that my views on the dieting of American seamen incline to the principles so ably advocated by Prof. Atwater, deduced from the experience of hundreds of dietaries in actual existence among our people; that is, less proportional carbohydrates, sugars and starches, and somewhat more fat than is usually given in the standards, and larger amounts of albuminates, the more easily assimilable stimulant food, and what is of much importance, the more satisfying. It is certainly true of American seamen, that they consume more protein relatively than seamen of other nationalities, and that they seem accordingly more active in labor and quicker witted.

TABLE F.—STANDARD EUROPEAN DIETARIES.

	Nutrients in Grams.			Potential Energy in Calories.
	Protein.	Fats.	Carbohydrates.	
German (Voit).				
Average man, at rest	110	50	450	2761
" " moderate labor	118	56	500	3055
" " severe labor	115	100	500	3571
French (Dujardin Beaumetz).				
Average man, at rest	129	35	410	2535
" " severe labor	190	90	600	4076
English (Playfair).				
Adult, in full health	119	51	531	3139
" hard work	185	71	568	3747

TABLE G.—AMERICAN STANDARD DIETS (PROF. ATWATER.)

	Nutrients in Grams.		Potential Energy in Calories.
	Protein.		
Man with little exertion, or woman in light work	90	Fats and carbohydrates mutually replaceable, and quantities vary with conditions of consumption.	2500
Man with light work or woman moderate work	100		3000
Man with moderate work	125		3500
Man with active muscular work	150		4000
Man with severe " "	175		5700
Man with very severe " "	200		7500

Children and the World's Fair.—The Board of Lady Managers of the Columbian Exposition has undertaken to build and equip a structure devoted to children and their interests. Lectures will be given upon the development of the child's mental and moral nature by improved methods of home training. There will be a crèche for babies and a play-ground for children.

HERPETIC ERUPTIONS OF THE MOUTH AND PHARYNX IN CHILDREN.

Read in the Section of Diseases of Children, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY S. HENRY DESSAU, M.D.,
OF NEW YORK.

What is commonly known as a fever blister, or *herpes labialis*, has from the earliest days in medicine been associated in its causation with some disorder of the gastric function. There is every reason to believe that such is a fact, the immediate cause of the eruption being an irritation of a terminal nerve filament by a peculiar poison generated through some disorder of normal digestion by the fever process. For this reason herpes is now classed by dermatologists as a neurotic eruption. Now as herpes affects the lips, in some cases amongst children the eruption may also appear within the mouth, on the mucous membrane of the tongue, the pharynx and the tonsils. It will always be found that some degree of gastric disturbance, either with or without fever, has preceded the eruption in this locality.

Although there is nothing new offered in this statement, it is surprising that it is not more familiar to the profession. In a large practice amongst children extending over 20 years I have seen only a few *typical* cases of herpes of the mouth and pharynx. Here all doubt as to the correctness of the diagnosis was settled by the appearance of the vesicles upon the skin of the lower lip, and running back in almost a direct line, the eruption in the form of small apthous-like ulcers could be traced upon the mucous membrane of the lip, the gums, the dorsum and edge of the tongue and upon the tonsils. Without the characteristic eruption being demonstrated upon the skin of the lower lip, such cases might easily be mistaken for so-called aphthous or even follicular stomatitis. And this is the point that I desire to make in this short contribution. May we not rightly regard all of these affections of the mouth in children, excluding of course thrush, which is of parasitic origin, as herpetic, even though all of the typical features of the eruption be not present? Given a child whose nerve cells are sub-normal in point of nutrition, either from hereditary transmission or improper pabulum, and such child, other things being equal, will be far more liable than another child of a higher order of nerve organization, to the action of certain products of abnormal digestion, acting as a poison upon the nerve cells. These poisons I think may be identified as the ptomaines which are the product of fermentation caused by the presence of germs growing upon the albuminoids of the food and anatomical tissues.

Now in a young child whose nerve cells are decidedly more sensitive to disturbances of nutrition than at an older age, the slightest departure from the normal in physiological function will often be the means of producing an impression upon the cells controlling the terminal nerve filament. This peculiar predisposition to irritating influences may be witnessed in adults where local contact of certain substances, such as pepper, shell-fish or even saliva from kissing will produce herpes of the lip.

I have for some years entertained the opinion that the affection so commonly seen in children, known as follicular tonsillitis or *angina lacunaris*, is due to gastric disturbance, either from improper food or over-feeding. This view is strengthened by the result of treatment, which is a confirmation of the old aphorism, that "the cure shows the disease." My *treatment for this affection is entirely internal*, the difficulty of making local applications in young children being thus avoided. I *give calomel in doses of* $\frac{1}{16}$ grain in the form of the palatable tablet triturate, repeated every 2 or 3 hours for 2 or 3 days, and the successful result is prompt.

There is a great danger however, in a careless observer making a mistake in diagnosis in this affection, especially in view of the fact that there is a strong resemblence in the appearance of the parts in follicular tonsillitis to mild cases of diphtheria. In fact there is a determined disposition on the part of some authorities in pediatrics to call all affections of the pharynx, where there is the appearance of an exudation, diphtheria. Such a course would undoubtedly be safest on the whole, for the welfare of the general community, but at the same time our advance in the knowledge of medicine would be receiving a serious set-back. I think ordinary care in observation will overcome any danger of likelihood in spreading such a serious contagious disease as diphtheria. The exudation in mild forms of diphtheria, however slight it may be, is always uniform and consistent, even though it may not be extensive enough to be deeply embedded in the mucous membrane; while the exudation that covers the follicles in follicular tonsillitis, apthous stomatitis and typical herpes of the pharynx is pultaceous, breaking down easily when the parts are cleansed with a dossil of cotton wool. I am now referring only to the difference in the *appearance* of the exudations. I have referred to follicular tonsillitis at such length for the reason that I am inclined to place this affection as well as apthous and follicular stomatitis in the class of herpetic affections. They are in my opinion due to a similar original etiological factor as herpes, and in this regard I am pleased to find myself concurring with the views of Dr. Forcheimer as expressed in his article on "Apthous Stomatitis" in the May number of the *Archives of Pediatrics*. No better treatment in these affections of the mouth and pharynx in children can be found, than fractional doses of *calomel* given in the dose and form I have before mentioned. In such doses calomel acts as an undoubted stimulant of the liver, one of the five functions of which organ it is to destroy the poisons formed in the process of both normal and abnormal digestion of food and so prevent their entrance into the general circulation of the blood.

ADDRESS OF THE CHAIRMAN—PROGRESS AND NEEDS OF DENTISTRY.

Delivered before the Section of Oral and Dental Surgery, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich. June, 1892.

BY J. TAFT, M.D.,
OF CINCINNATI, O.

A backward glance for a year or two upon what has been accomplished affords ground for encouragement.

While, as is the case in almost every department of human occupation, there is a dark and a bright side, aspects discouraging and encouraging, yet it is quite apparent to the unbiased and faithful observer, that the dark side is becoming diminished in extent and lessened in intensity, and the bright is extending in all directions and assuming an increasing brightness. Discouragements are fading and encouragements growing.

I will for a brief time endeavor to direct attention to a few things that seem to afford warrant for this statement. If we look to the mere practical matters of our profession it is quite apparent that never before was there such an intense interest and earnestness shown as at the present time; never were practical methods, processes, instruments, appliances and materials examined, criticised and tested as to-day. It is no longer sufficient for a few to pass judgment in respect to any of these things, with the expectation that such decision will be accepted without question or challenge. While it is true that now more than ever before dentists are willing and even anxious to witness illustrations and demonstrations, it is equally true that every one, especially of the more progressive sort, must verify by his own tests and experience, that which he has witnessed at the hands of others; and as higher attainments have been made in the knowledge of underlying principles, these tests and examinations are more and more exacting and severe, thus bringing the greater probabilities of approximation to the truth.

There is a growing community of interest in all that pertains to the principles and practice of dentistry, in as much as almost the entire profession have given liberally of that which they possess, however it may have come to them.

There is a feeling of intolerance in the profession towards those who hold or retain from others anything new or valuable that may by any means have come into their possession. This principle is clearly presented in the Code of Ethics.

The opinions and views entertained in regard to the education and training of those who are to constitute the dentists of the future are undergoing rapid and radical changes, more pronounced than ever before. The enquiry comes from the pen or lips of every interested one—what can be done to avoid the errors and deficiencies of the past, and to make more thorough, complete and successful, the educational efforts that are now in operation, as well as those that may in the future be inaugurated?

Such questionings are indicative of an earnest desire for something better. As a result of these questionings and desires a very pronounced and significant change is now taking place in the educational schemes and methods suggested, and are being tested.

The old regular didactic lecture method, supplemented by vague and unsystematic clinical demonstrations, are no longer accepted and regarded as properly meeting the requirements. While the power of the lecturer—the living speaker, is esteemed as not less valuable than in the past—indeed it was never used with greater power and efficiency than at the present time—yet there have been brought into operation with it far better, more systematic, extended and thorough clinical demonstrations, and this not only to the observation of the learner, but he is subjected to the most thorough personal, manual training.

In connection with the lecture method, quizzing, reciprocal questioning, recitation, frequent writing upon the subjects of the course, and essays upon subjects assigned, together with class discussions, are being utilized to the great advantage of the learners.

No educational institutions, especially those of more than an elementary character, can assume to be well equipped for their work without a good library and museum. The library should contain, as fully as possible, the entire literature of all subjects and branches taught in any given institution.

Dental colleges should by no means be an exception in this respect. It is gratifying to know that the dental colleges of the country are turning attention to this important subject. Within the last two years more attention has been given to this question than ever before. Museums and appliances for illustrative teaching are commanding more attention and being more and more utilized. The number of dental schools has been much increased within the last two years, and most of these have established high requirements. It is a fact of great significance that the larger proportion of dental colleges recently organized have been in connection with medical colleges or universities; and some of the older dental colleges have sought and obtained alliances with universities. It is a noteworthy fact that in most cases of such alliance, the suggestion has originated with the medical schools, or with the authorities of universities. This fact considered in connection with another, viz.: that the first dental college ever organized sought an humble position with an established medical college, and was not only denied, but rudely repulsed, and with the statement made that the thought of such an alliance could not for one moment be entertained.

The favor with which dental colleges are now received by medical and other institutions is prophetic of great things for the future; it is an appreciation of dentistry by the medical profession that is not properly esteemed by the majority of dentists. Physicians have come to recognize dentistry as a department of the great healing profession, and that for the proper performance of its duties and responsibilities the groundwork of general medicine should be possessed by the dentists.

The increase in the number of dental schools is questioned, and even severely criticised by some; but that there is a surplus of thoroughly efficient schools will hardly be affirmed by any. Quite a number of the schools now in operation should raise their standard of requirements and teaching, or others should be established that would conform to the requirements of the times.

A great and important step was taken at the beginning of the current scholastic year, in the extension of the time required for graduation from two to three terms of not less than five months each. This was done in compliance with resolutions passed by the National Association of Dental Faculties, as follows:

Resolved, "That attendance upon three full regular courses of not less than five months each, in separate years, shall be required before examination for graduation."

It was further resolved:

"That we agree to adopt a graded course of instruction and an intermediate examination between each course, which course of instruction and examination shall be conducted as the faculties of the different colleges represented in this Association may deem proper."

This Association has been and is one of the most potent factors in promoting and maintaining the progress and welfare of the profession. Its influence is uplifting and is in a good degree effective in securing advanced methods of work and harmonious co-operation. During the last two years there has been a larger attendance at the dental colleges of the country than ever before, influenced somewhat, no doubt, by the more extended and strict requirements which came in force October 1, 1891.

A regular systematic course of college instruction and training is now recognized as the only proper method of entering the practice of the profession, and the recent legal enactments regulating the practice of dentistry have been formed with this idea prominently in view. No one who has not had such preparation will be acceptable in the more cultivated and refined communities. In the principal dental societies of the country graduation is a requisite for membership. This is a recognition of the desirability and value of thorough, systematic, scholastic professional training. This of course looks to a higher standard of professional attainments and excellence. There is in all our educational institutions a general disposition to extend the curriculum—the scheme of study and work. Branches that have from the beginning formed a part of the course are now more thoroughly and largely studied, and new subjects are being introduced from time to time, especially those that can be made tributary to the needs of a professional education.

Preliminary education now receives more attention than ever before. This subject received an impulse from the following action of the Association of Dental Faculties:

Resolved, That a preliminary examination be required for entrance to our dental colleges. Such requirements shall include a good English education. In case of any applicant failing to pass satisfactory preliminary examination, the other colleges of this Association shall be informed of the fact.

Resolved, That a candidate for matriculation who presents a diploma from a literary institution, or other satisfactory evidence of literary qualifications, shall be admitted without further examination.

Resolved, That we agree to adopt a graded course of instruction and an intermediate examination between each course, which course of instruction and examination shall be conducted as the faculties of the different colleges represented in this Association may deem proper.

Resolved, That after June, 1893, the yearly course of study shall not be less than seven months, two of which may be attendance upon clinical instruction in the infirmary of the school, now known as the intermediate or infirmary course.

This action of the Association was after due consideration passed by more than two-thirds of the members present, and now all the colleges (about thirty in number) represented in this Association conform to the requirements of these resolutions, which is regarded by all as a marked step in the line of progress.

Reference is often made to the rapid increase in the numbers entering our dental schools, and apprehension is expressed lest there should be an excess in the ranks of the profession—more than a supply for the demand. It is well for those who entertain such an idea to consider that this is, from this time onward, to be the only method of entering the practice of dentistry. The office pupilage road is about closed and will remain so. Again, those who graduate from our colleges do not all remain, but from ten to fifteen per cent., recognizing their want of natural ability or finding some more lucrative and inviting field of occupation, leave the practice of dentistry and enter a more (to them) acceptable service. Again, there are many in the profession who, though they have been in practice for many years, have fallen behind and are not able to cope with well equipped and thoroughly educated dentists of to-day. And they are constantly dropping out and leaving their fields to others better qualified. And as the public becomes more intelligent and better informed in regard to the value and importance of the teeth and learn that they are a necessity to the welfare and best interest of the animal economy, and understand fully the capability and resources of dental science and art, the demand will be made and must be answered for the best service possible. This growth in intelligence on the part of the people is fully keeping abreast with, if not outstripping, the boasted progress of dental skill and art. It is the bold assertion of one who has given much thought to the subject, that "There are not enough well equipped dentists in the United States to properly cleanse and keep clean the teeth of all the people of the country who need such service." This statement leaves out of view all other treatments and operations upon the teeth and mouth. Whether or not this statement is literally true as has been stated, we cannot affirm that there are more well equipped practitioners in our country than are needed; of the inferior variety there probably is an excess.

By reference to the graduations of the various dental colleges of the country for the year beginning June 1, 1891, and ending June 1, 1892, it is shown that from thirty of the leading colleges the degree of D.D.S. has been conferred upon 1,430, about ten per cent. of whom are foreigners and will go to other countries, thus leaving the number for this country 1,287. If ten per cent. of these drop out in a short time, it would leave as the net increase 1,160, which will hardly more than supply the decrease, and this leaves out of the estimate the increase in the country's population. The number of matriculates during the last year in these thirty schools was 2,727, deducting from these the graduates leaves 1,397 from which to form the senior and junior classes of the coming year. This view of the subject, if correct, indicates to us clearly that there is not now, nor is there likely to be in the near future, an excess in the numbers of dental practitioners in this country. And this is without question true in regard to those who possess a thorough preparation. Of this class there probably never will be an excess —more than the public welfare requires.

The progress of any department for the future depends upon the free response to certain requisites. Some of these may here be mentioned.

First in regard to our dental schools. Notwithstanding the improvements and progress that have been made, much yet requires to be done. More thorough work should be required upon most of the ordinary branches of the curriculum. In the past the time has been altogether insufficient, and acknowledgedly so, for the proper accomplishment of the work required. To meet this necessity either longer terms or an additional number should be required. The student's work from the beginning to the end of his course should be continuous. It is a mistake that the student is permitted to follow his special study and work for from four to six months in the year and to remain idle, so far as this work is concerned, the balance of the year. He should be made to realize that it is for his interest in some way or other to follow his course of instruction, study and work continuously from the beginning until his graduation. The time required for the completion of a course will depend upon the extent of that course, the natural ability, industry and energy of the student. It was formerly supposed that two five months's courses were quite sufficient. This idea now, however, is scarcely entertained by any one; the more extended the course, the greater number of branches embraced, the longer time will be required for the completion of the work upon them. A thorough consideration of this branch of the subject is an important need of the times.

The preliminary qualification and preparation of those who propose to enter upon a course of instruction for dental practice is one of far greater import than is usually supposed. Heretofore the practice has been that almost any one, regardless of his natural or acquired attainments, has been allowed to enter upon a course of study and work preparatory for dental practice. The evils resulting from this course have been quite apparent. It is impossible to make proper preparation without a right beginning. For the right accomplishment of a dental course, a trained mind is a requisite, one accustomed to systematic thought and study and well equipped in the knowledge of the branches of a liberal education. In addition to this, there should be certain natural qualifications and fitness for the work proposed. Rarely does any one present himself for entrance to a college without consulting a practitioner and endeavoring, to learn something as to what will be required of him. In all such cases the practitioner should exercise due discrimination and refuse to recommend or advise the unfit to enter upon a course of study. The subject of giving advice to intending students should be thoroughly considered and advisedly exercised by every practitioner. A course of this kind would very much aid our colleges in determining whom to accept or reject. Most colleges now require of those who apply certificates,or testimonials in regard to character and good standing. This, however, is not enough. These certificates are given by good citizens in any walk of life, but it would be well if every student who applies for entrance to a college would bring a statement from a well qualified dentist, giving his views as to the fitness of the person to enter upon such a course. It would be well if all colleges made such a requirement. It would then become incumbent upon every intending student to consult a good dentist and obtain his advice in reference to his capability. In the preparation of those who are to enter the ranks of the profession in the future it is important that more attention be given than in the past to a broad, liberal education and culture. The great mass of those who in the years gone by have entered the profession have been limited in this respect. A breadth and depth of culture gives power and strength. It makes one better in his profession, gives him a better standing and influence with his fellows with whom he comes in contact and mingles. It would be better perhaps, as a rule, to require preparatory to entering upon a course of medicine or dental study a classical education, and the tendency evidently is in this direction. A course of not less than one year of private pupilage would be a good initiative for the student, under a well qualified, faithful teacher, but this is so rare that to make it a requirement would avail little or nothing. But the members of the profession, though they may not be able to take or give proper instruction to private pupils, can be of immense service in an advisory way. Indeed, the profession is quite as responsible for the character of the graduates sent out as the colleges themselves. A student when applying to a college may be masked and even remain masked during his course of instruction, so that the authorities of the institution may not know his real character at all; but this view is very seldom the case with the neighbors, friends and associates of the young man. They know him without his mask and they should see to it that at least the colleges are not imposed upon in this way.

We may not now criticise the past; its work has been done and cannot be recalled; it was accomplished under circumstances and with a light very different from our environments of to-day. Perhaps the best possible was then accomplished, but the demands of the present are of a higher order and far more exacting than hitherto.

In respect to our colleges permit a suggestion which if carried out would place all upon a higher and more independent plane. As colleges at first and for many years were organized, they were dependent for support wholly upon the fees of those who patronized them. The income then was regulated by the number of those in attendance; the larger the number the greater the income. By-and-by this came to be so fully recognized that a different arrangement was sought and has in some institutions been carried out, either by endowment of the schools or by some other provision for their support independent of the income from students. A full and complete connection by dental colleges with a university or with endowed medical colleges would seem to be about the only way of escape from this unfortunate condition. It is true that in the future dental colleges may be endowed as such. Nothing of the kind has as yet been attempted so far as I am aware. Endowments for dental colleges have been said to be the great present need for dental colleges. How shall it best be accomplished?

And now a thought or two in reference to this organization which so closely allies us to the general medical profession. The very fact of this Section is an evidence of encouraging progress. It gives to dentistry a position which it did not occupy before; it brings upon its members and upon the members of the dental profession an added responsibility; it brings its practitioners into closer alliance with the members of other departments of the healing fraternity. It is prophetic of progress for the future and is a stimulus to those who rightly appreciate this inclination to go forward and make higher and higher attainments, and to render themselves worthy of the high trust placed upon them.

An attempt to measure and estimate the condition and status and progress of dentistry as it stands to-day compared with the past might with entire propriety embrace both the art and science—the practical and theoretical—and not only this but the influences and forces that are operative in promoting its development and growth. In what is now proposed, little more than a brief reference will be made to the art side of the subject; the intent is to note more especially some of the forces that are now operative for the further upbuilding and establishment of that department of the healing and restoring art with which we are the more immediately connected.

PERSONAL EXPERIENCES IN EMPYEMA OF THE MAXILLARY SINUS.

Read in the Section of Oral and Dental Surgery, at the Forty-third Annual Meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY H. GRADLE, M.D.,

OF CHICAGO, ILL.

Suppuration of the antrum is a subject so much discussed of late that it would be unprofitable to present to you anything but personal experiences on mooted points. The diagnosis of this trouble is easy only in cases with pronounced symptoms, but in very many it is quite difficult to be certain of it. In cases coming under your observation as dentists the dental history is often a definite guide in the diagnosis. In empyema however, of nasal origin, considerable diagnostic difficulty may be experienced.

The only constant symptom is discharge from the nose. If this be one-sided there can be scarcely any doubt that it comes from one of the accessory cavities, but not necessarily from the antrum of Highmore. When disease involves both sides, however, this criterion fails. A fetid odor strongly suggests retention of pus in a sinus. The pus is probably always fetid if of dental origin, but not necessarily if the antrum has been infected from the nose. The quantity of the discharge varies in different instances and is no criterion. If the pus can be seen issuing from underneath the middle turbinated bone it must come from either the frontal or the maxillary sinus.

Pain in and around the cheek is common but not constant in acute cases, but infrequent in chronic instances. Tenderness over the inflamed antrum I have never seen.

I have not been able to rely for diagnostic purposes upon translumination of the bone by means of an electric lamp placed in the mouth. In order to use this method the room must be very dark or an opaque hood must be put over the heads of surgeon and patient. An American lamp which I used at first I found too weak, but I find that I cannot rely either upon an eight-candle power furnished by Hirschman, of Berlin. The transparency varies with the configuration of the maxilla, and pus, unless copious and thick, does not impede the light much more than bone tissue.

An absolute diagnosis can only be made by exploration. This is a very innocent procedure when made from the alveolar process. If the teeth are sound, however, and there is no room between them, a puncture can be made through the canine fossa. It is well to incise the mucous membrane where it is still firmly attached to the alveolar process and to separate it upward from the bone. For if the loose tissue under the cheek is irritated by the instruments great swelling is apt to occur. This is not dangerous but very annoying. A physician can use a conical hand-drill instead of the dental engine, as the bony wall is not thick. Even the stout needle of the aspirator suffices sometimes to force its way into the sinus. If aspiration through a glass tube attached to the canula does not reveal pus the sinus may be irrigated with sterile salt solution. As this flows from the nose into a basin the presence or absence of pus is at once determined.

It has been stated by Ziem, who has had a very large experience, that in some cases pus cannot be found at the time of the puncture, but will issue on the next day. This is not due to a new infection during the operation. I have once had the same experience in a case where preëxisting asthma was at once benefitted by operating upon the antrum. It depends probably on the existence of incomplete partitions in the sinus.

While empyema of the antrum may not be attended by any characteristic symptom sufficient for a diagnosis it may yet cause considerable disturbances. These may be neuralgic pains, headaches, nasal stuffiness and discharge and other consequences of nasal irritability, such as asthma and less commonly derangements of the eyes and ears.

It does not seem to be commonly known that antral disease of nasal origin may heal spontaneously. I have often seen instances of acute coryza in which pus was seen to issue from the nasal orifice of the antrum. And yet after a time all suppuration ceased, nor were there after the recovery any evidences of disease of the antrum. A more positive proof was obtained in a lady in whom I opened the antrum through the canine fossa last September. There was a great deal of pus of mawkish odor but not decomposed. On account of irregular attendance the opening closed after the lapse of a week at a time when all symptoms, as well as the result of the irrigation two days previously, indicated the continued formation of pus. She then refused another operation. However, as she still has nasal discharge and irritability (and ear disease) I punctured the same antrum again this May, but found no pus on thorough search.

A curious observation which I have made twice was the removal of symptoms after the irrigation of the antrum where the operation did not confirm the diagnosis but revealed absolutely no pus. Once it was discharged from the nose, in the other case ciliary irritation and neuralgia without ocular lesions

In regard to treatment, I can add but little differing from general experience. In cases dating back no longer than a few months the drainage of the pus is sufficient for a cure. By opening the antrum, irrigating it with an indifferent sterile fluid and blowing in boracic acid we can cure the recent cases in from two to six weeks. A much longer time is required for cases of long standing, sometimes more than one year. In such chronic instances the opening should be made large. The easiest operation is from the alveolar process, if any teeth have been or are to be extracted or if there be room between them. But as this route does not, as a rule reach the lowest part of the antrum, Kuester's operation through the canine fossa is often more satisfactory. In the latter case a drainage tube can be worn; in the alveolar operation this is superfluous and even an obturator adapted by the dentist to keep the fistula open is of questionable service. One possible reason for the tedious recovery of old chronic cases is the occasional hypertrophy of the mucous membrane lining the antrum amounting even to a polypoid condition. Through a sufficiently large opening, I have used a curette with decided subsequent improvement and with but little pain in two such instances. Antiseptics have seemed to me to be of no greater influence than irrigation with salt water when the pus is copious. As the secretion is diminishing it is doubtful whether irrigation is at all necessary. The pus formation is distinctly checked by blowing into the cavity boracic acid or other soluble powders of similar antiseptic properties. In the more tedious class of cases this can be entrusted to an intelligent patient.

Discussion.

Dr. M. H. Fletcher said that he had had but little experience in cases of this kind, but related the case of one of his patients whom he took to a specialist for operation. The operator attempted to make an opening into the antrum through the canine fossa with a chisel, and found it so difficult that the patient was exhausted before an entrance was effected, and had to return home for rest. Coming back another day to have the operation completed, entrance was effected with a drill. The specialist said there had been a very unusual thickness of the bone; and Dr. Fletcher wished to ask whether such trouble was often found.

Dr. Gradle said that while there were variations in the thickness of the bone, it was rarely that any serious trouble was found.

Dr. E. S. Talbot said he had seen a case similar to the one mentioned by Dr. Fletcher, where the dentist had drilled into the nasal cavity instead of into the antrum. In many cases the antrum does not extend forward to the canine fossa, and if it does it will not extend more than one fourth to one-half inch back of the third molar. The operator in the case of Dr. Fletcher may have pierced the bone anterior to the antrum into the nasal cavity. Then besides, the antrum is sometimes divided by septa of bone. He believes the better way is to drill into the lower part of the cavity. When this is done it is easy to wash out the cavity with antiseptics, as the drainage will be good and the trouble will be cured.

(*Discussion to be concluded.*)

SOCIETY PROCEEDINGS.

American Public Health Association.

(*Concluded from page 755.*)

Wednesday, November 30.

The second morning session convened at 9:30 o'clock, Dr. Formento presiding.

After prayer by Rev. A. J. Steelman, five more applications for membership were admitted, similar to those at yesterday morning's session. It was a noticeable fact that more American physicians were in attendance than at either of the day sessions held on Tuesday.

The amendment to the Constitution offered last year at the Kansas City meeting was so amended as to include in the membership physicians of the Republic of Mexico and Mexican States. The election of one member to the advisory council from each State in the United States, States of Mexico, and Dominion of Canada, was then proceeded with, which is a very long list indeed.

The report of the treasurer, Dr. J. Berrien Lindsley, of Nashville, was then read, which summarized, is as follows:

Balance brought forward one year ago	$ 50 34
Annual dues	1,845 00
Sale of volumes	97 80
Total cash received	$1,993 14
DISBURSEMENTS.	
Printing and binding of Volume No. 17	$1,083 39
Office of Secretary for clerical help	250 00
Postage and clerical help for Treasurer	124 30
Expenses of Secretary for travelling	266 50
Expenses of Treasurer for travelling	111 59
	$1,835 78
Leaving a balance to new account of	$ 57 36

The first paper read was "The Sanitary Relations of Texas and Mexico," by Dr. R. M. Swearingen, of Austin, Texas. The author treated at considerable length the subject of quarantine. He stated that Texas is more open, and more exposed to small pox than any other State in the Union; that there were in his State last year 1,903 recorded cases of small pox. Of this number 464 had died. And $150,000 had been expended in caring for them.

During the present year thus far, there have been 1,109 cases with 300 deaths, and $19,341 had been expended caring for them, and Texas protests against these, impending evils.

The entire matter of his paper, which embraced the correspondence between himself, the Secretary of State, the Hon. James G. Blaine, the Governor of Texas, and Mexican Consuls at Vera Cruz, and elsewhere, was finally referred to this distinguished body (at this meeting) for a sanitary treaty.

(Discussion on the above subject was by vote deferred until Thursday.)

Dr. J. D. Plunket, of Nashville, offered the subjoined preamble and resolutions which, under the rules, was referred to the executive committee.

> "Whereas, The subject of hygiene is through the efforts of this organization now taught in the public schools of the U. S. A., at the University of Pennsylvania and Virginia, at Harvard, Yale, Bowdoin, and other colleges, and at the Naval Academy, at Annapolis, Md., and
>
> Whereas, Military hygiene as a branch of the general art of war, including the subjects of shelter, heating, ventilation, water supplies, food, disposal of sewage, and the clothing and physical training of troops, both in peace and in war should be recognized as a necessary and important part of the curriculum at all medical schools, and,
>
> Whereas, This important subject forms no part of the curriculum at the U. S. Military Academy at West Point, N. Y., therefore be it
>
> *Resolved*, That a committee of this Association be appointed to urge upon the Congress of the United States, the advisability of including the subjects of physiology and hygiene in the course of study at the Military Academy aforesaid.

The above were adopted on Friday afternoon, Dec. 2.

The second paper read was entitled "Defence of the Ports and Frontier Cities of Mexico against the Epidemic of Cholera that invaded Europe, and was on the point of invading the United States this year," by Dr. Eduardo Liceaga.

Third paper read was a short one entitled "A Modification of Inner Quarantine and Regulations as Especially applied to Epidemics of Yellow Fever," by Dr. D. B. Blake, of Curero, Texas.

Fourth paper, "On Yellow Fever, with some Considerations on Parasitism in Yellow Fever," by Dr. M. Carmona Y. Valle, of the City of Mexico. This paper elicited much applause.

Fifth paper read was a very brief one, entitled, "Discovery of a new Optical Combination for the Microscope," by Dr. Angel Gavino, City of Mexico.

Sixth paper, "Prophylaxis of Hydrophobia in Mexico," by Dr. Augustin Reyes (read in Spanish), City of Mexico. He spoke of having treated 659 cases with but three deaths or 0.45 per cent. Several ladies were present and listened to the proceedings with much interest.

The Association then adjourned until 3 P.M., at the Preparatory School.

The afternoon session convened at 3:30 o'clock at the appointed place, President Formento presiding.

In relation to the valuable paper read by Dr. Manuel Carmona, it was resolved to request the Supreme Board of Health of Mexico, to inquire into the reasons for the prevalence of yellow fever on the Atlantic coast while it has not appeared on the Pacific seaboard (as it was stated) but twice during the past century.

The first paper of this session was read by Dr. Juan Ramirez de Avellano, on "Croup in the City of Mexico, and Prophylactic Measures Against its Growth." It was read in his native tongue and proved to be a lengthy treatise upon this malady.

The succeeding paper was read by Mr. Mark W. Harrington Chief of the Weather Bureau at Washington D. C., on the "Relations of the Official Weather Service to Sanitary Science." The suggestions of the author were valuable and he closed his discussion amidst plaudits.

It was here suggested that the signal service officers of the United States and Mexico, be asked for data with a view of its application to sanitation, and that a committee be appointed with Mr. Harrington as Chairman. He consented to serve on such committee but thought a physician should be its chairman. Dr. Henry B. Baker, of Michigan, was then named, after which a motion prevailed that such committee be appointed.

The next paper read was upon "Typhoid Fever," by Dr. Nicholas Ramirez de Avellano which was discussed at considerable length by several Mexican physicians.

"Malarious Localities, How they may be made Salubrious," was the theme of an able essay by Dr. Charles Smart, Surgeon U. S. Army. He closed his paper amidst the applause of all present.

The Association then adjourned to meet at 3 P.M., Thursday at the Preparatory school.

Thursday Afternoon Session, December 1.

There was but one session of the Health Congress, Thursday, and that was held in the afternoon of that day, the morning having been occupied by the delegates in witnessing the inauguration of President Diaz and attending the public reception at the National Palace.

The Congress convened in the afternoon at 4 o'clock, an hour after the hour set: consequently the reading of several valuable papers had to be omitted.

Several unimportant announcements were made by the local committee of arrangements.

The executive and other committees reported.

There was a lengthy and exhaustive discussion of the quarantine question.

"Prophylactic against Ophthalmia in New-born Children," by Dr. Augustin Chacon, of the Federal District, was the first paper read and many new suggestions were made for the prevention of this frequent malady.

The next paper was by Henry F. Hoyt, M.D., Commissioner of Health, of St. Paul, Minn., and treated on "The Collection, Removal and Disposal of Garbage and Dead Animals at St. Paul." The matter was thoroughly discussed after Dr. Hoyt closed.

"Endemic and Epidemic Diseases as Observed in the Gulf Ports of Mexico'" was read by Dr. Luis E. Rulz, of this city, after which the congress adjourned until 9 A.M., Friday.

Friday, December 2.

This morning at 9:45 o'clock was begun the fourth or last day of the proceedings of this annual meeting with Dr. Formento in the chair.

After prayer by one of the resident ministers, several announcements by the Chairman of the Local Committee of Arrangements were made.

The executive committee reported 19 additional applications passed on, which took the usual course for election making 570 in all that had been elected members at this meeting.

Dr. Plunket's resolution offered on Wednesday was also recommended by the executive committee and as such was adopted.

Among the other resolutions adopted was that offered by Dr. Liceago, looking to the appointment of an International Commission of seven members from this body with Dr. Formento as Chairman to inquire into and adopt the most efficacious measures as to the best methods of preventing the spread of yellow fever, and the best means of quarantine from entering the ports of the U. S.

Also a resolution offered by Dr. Durgin of Boston, regarding the impending fear of cholera in the United States in

1892-93 petitioning Congress to so amend the emigration laws so as to provide for greater protection to our country from cholera (and he might have added other contagious and infectious diseases) and the prevention of importation of these diseases by having baggage properly fumigated. Also the following offered by Dr. A. L. Gihon after a long and desultory debate, in which several amendments were offered, and in succession they were tabled.

Resolutions offered and adopted by Medical Director Albert Gihon, U. S. N.

Resolved, That in view of the impending danger from cholera in 1893, it is the opinion of the American Public Health Association, that a National Health service should be established in the United States of America, as has been done in the Republic of Mexico, to procure uniformity of action in protecting the sea-coast from invasion by epidemic disease and to permit international sanitary conference and concert with this object, and that this Association respectfully requests the Congress of the United States to consider the imperative necessity for the prompt establishment of such a service, in the interest as well of the United States as of Canada and Mexico.

Resolved, That the Committee on National Health Legislation should be empowered and directed to communicate to this end with such committee as may be appointed by the Senate and House of Representatives of the United States to consider this matter.

Resolved, That the Committee on National Health Legislation shall be continued and enlarged to the number of thirteen.

Dr. Walcott of Boston, Chairman of the Committee on Legislation, submitted a lengthy report looking to the appointment of a National Health Bureau, or National Commissioner of Health by Congress, as a cabinet officer or chief sanitary officer of the U. S., and that the control of maritime quarantine should be in the hands of the National Government, which was adopted unanimously.

Dr. Griffin, Health Commissioner of Brooklyn, N. Y., offered the following preamble and resolutions which explain themselves; the same being referred to the Executive Committee; but for reasons best known to it, the committee did not report recommending their adoption.

WHEREAS, The American Public Health Association, at its meeting held in the City of Mexico, November 29, 30, and December 1 and 2, 1892, for the purpose of discussing matters relating to the public health and the best manner of preventing disease, and

WHEREAS, This country has been seriously menaced by an invasion of Asiatic cholera during the past summer and fall, particularly during that period between August 31 and October 21, 1892, when nine hundred and ninety-seven vessels from foreign ports, carrying eighty thousand and seventy-seven persons, passed through the quarantine of the port of New York, all having been personally examined by Dr. Wm. T. Jenkins, the Health Officer of the port of New York, and his assistants, and

WHEREAS, Through the vigilance, energy, zeal and efficiency of the investigations made by these officials, 266 cases of Asiatic cholera were discovered to have occurred on vessels coming from infected ports, and of this number ninety-six terminated fatally, seventy-six at sea and twenty at the quarantine (cholera) hospital Swinburne Island, and twenty-four deaths on board vessels in the port of New York, but in no instance was there a case of Asiatic cholera among any of this large number of persons that passed through quarantine. Therefore be it

Resolved, That this Association avails itself of this occasion, to express its high appreciation of the successful efforts of Dr. Wm. T. Jenkins, Health Officer of the port of New York, in preventing the introduction of Asiatic cholera.

Dr. Benjamin Lee, of Philadelphia, introduced a resolution, "That the Supreme Board of Health of Mexico be
requested to furnish the Association ng
virulent fevers peculiar to and most 1 "
which was also referred to the executi
ing to

per, entitled "Contributions

logical Study of the Drinking Waters of the City of Mexic
was read by Dr. José Ramirez, Secretary of the Supren
Board of Health, City of Mexico.

The above was discussed by Dr. Ojaros and Dr. Gavino.

The last paper of the afternoon session was read by I
Manuel Septien, of Queretaro, whose paper was one of tl
most interesting of the congress, and was entitled: "Impo
tance of Hygiene, and Convenience of Creating a Sanita
Department." During his discourse he said:

"The people and government of the United States ha
enthusiastically embraced the idea. That great natic
hardly born yesterday, and that to-day astonishes the wor
with its surprising development, that is unprecedented c
the earth, owes its wonderful prosperity to the practic
character of its sons and to the wise legislation th
governs it. Notwithstanding its rooted republican instinc
and strong adhesion to State rights, it acknowledges tl
necessity of submitting to a central authority that repr
senting the sanitary interests of the whole country, wi
unify and direct its course in the most convenient manner

At the conclusion he remarked:

"Gentlemen of the Hygiene Association, you who hav
consecrated yourselves to the noble study of the means c
prolonging life, you who form a part of this flourishing Asso
ciation and who have come to our country as missionarie
of peace and progress: Welcome to you all! May you
stay amongst us be a pleasant and profitable one; and whe
you return to your homes with our most fervent wishes fo
your continuous greatness, be assured that we also shal
continue our labors in the noble task of conquering for ma
the best happiness he can enjoy in this world."

The congress adjourned to meet at the Preparatory
School at 3 P.M.

AFTERNOON SESSION.

The afternoon session of the congress opened at 3:45 o'clock, vice-president Orvananos in the chair.

The election of officers was immediately proceeded with. Following is the report submitted to the Advisory Council, which was adopted:

President, Dr. S. H. Durgin, of Boston, Mass.

First Vice-President, Dr. Edua nga, of Mexico.

Second Vice-President, Dr. E Lachapelle, Mon-
treal, Canada.

Secretary, Dr. Irving A. Wa N. H.
Treasur enry D. Ho nt.
Three ers of Wm.
Bailey, , Ky., H nn.
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This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Richard J. Dunglison, Lock Box 1274, Philadelphia, Pa., sending him a certificate or statement that he is in good standing in his own Society, signed by the President and Secretary of said Society, with five dollars for annual dues and subscription for THE JOURNAL. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership. On receipt of the above amount the weekly JOURNAL of the Association will be forwarded regularly.

SATURDAY, DECEMBER 31, 1892.

A MEDICO-LEGAL PROBLEM.

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Apparently this delusion was broken up, and a complete reconciliation followed, yet in reality it was only strengthened. The practical step to have one or the other move away was found very difficult. The problem in the case was this, viz: a paranoiac and delusional mania, with concealed homicide impulse, to kill a certain man, is permitted to go in and out unrestricted, watching for an opportunity to carry out this impulse. There are no practical measures which can prevent this act. Crime will follow, then his real condition will be brought out in the evidence. This is not a single isolated case without parellel, but only one of a class, that unfortunately are becoming more prominent every year. In the efforts made to restrain these men, cunning lawyers for the defense have overwhelmed the medical testimony with confusion, and imputed the worst motives to physicians who were not able to make their testimony conform with the false legal standards. The theories on which the sanity of GUITEAU was decided, have been a sad blot on the progress of medical jurisprudence, along this line of study. The law is over half a century behind the medical recognition of these paranoiac cases.

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RIGHT OF STATES TO REGULATE THE PRACTICE OF MEDICINE AND SURGERY.

The legislature of Oregon has enacted a law, under which every practitioner of medicine and surgery is required to obtain a certificate from the State Board of Examiners that he is a graduate of a medical institution in good standing, to entitle him to practice his profession; or, if he is not a graduate, that he has been found, upon examination by the board, to be qualified to practice medicine or surgery; or that he was a practitioner of medicine or surgery, and was so engaged at the passage of the act; and the law also provides that any person practicing medicine or surgery without obtaining such certificate shall be deemed guilty of a misdemeanor, and punishable by a fine or imprisonment or both, in the discretion of court.

This law was attacked upon the ground that it was unconstitutional (1) because it discriminates between the citizens of Oregon by permitting one to practice medicine or surgery who was so engaged when the law took effect, without examination, while it denies the privilege to another, who may wish to engage in the practice after the passage of the act; and (2) because it discriminates between residents and non-residents of the State, by permitting a physician who was a resident and engaged in the practice when the act took effect to continue the pursuit of his profession without examination, while it denies the privilege to a non-resident, who may seek to engage in the practice, unless he undergoes an examination by the board, or is a graduate and in possession of a diploma.

The first point was based on the assumption that this law is in conflict with the State constitution, which provides that "no law shall be passed granting to any citizens or class of citizens privileges or immunities which, upon the same terms, shall not equally belong to all citizens;" and the second point was based on a like assumption, that the law is in conflict with the constitution of the United States, which provides that "the citizens of each State shall be entitled to all privileges and immunities of citizens in the several States;" and also in conflict with that portion of the fourteenth amendment thereto which provides that "no State shall make or enforce any law which shall abridge the privileges or immunities of the citizens of the United States."

Neither of these contentions is tenable, says the Supreme Court of Oregon, in deciding the case referred to, State *v.* Randolph. The right of every person to pursue any lawful business, occupation or profession he may choose to pursue, subject to such restrictions as the government may impose for the protection of the health, welfare and safety of society, is unquestioned. This paramount right, inherent in every government, to provide such regulations in regard to various avocations as the public welfare may require is very broad and comprehensive. It has been said: That all laws for the protection of the lives, limbs, health and quiet of persons, and the security of all property within the State, fall within this general power of the government, and that under the general police power of the State, persons and property are subjected to all kinds of restraints and burdens in order to secure the general comfort, health and prosperity of the State; of the perfect right in the legislature to do which no question ever was, or, upon acknowledged general principles, ever can be made, so far as natural persons are concerned. Whatever difficulty, therefore, there may be in defining the precise limits and boundaries by which the exercise of this power may be governed, all agree that laws and regulations necessary for the protection of the health, morals and safety of society are strictly within the legitimate exercise of the police power.

Among the various occupations of life, there are many which may be pursued by a person without danger to the public health or detriment to the public welfare, and need, therefore, no regulations to control them; but there are other occupations or callings which require special knowledge or training or experience to qualify a person to pursue them with safety to the public health and interests; and when the occupation or calling is of this character no one can question the power of the State to impose such restrictions and to provide such regulations as it may deem proper for the protection of the health and welfare of its citizens from the evils resulting from ignorance and incapacity. "The power of the State," said MR. JUSTICE FIELD, "to provide for the general welfare of its people, authorizes it to prescribe all such regulations as, in its judgment, will secure or tend to secure them against the consequences of ignorance and incapacity, as well as of deception and fraud." There are few professions that require more careful preparation to qualify a person to practice than medicine; and certainly there are few that more nearly concern the comfort, health and life of every citizen. In view of the important interests committed to the charge of the physician, the necessity that he should possess the necessary qualifications of learning and skill is so great, and his want of them likely to be attended with results so injurious to health and destructive of life, that the power of the State to enact such laws regulating the practice of medicine and surgery as are calculated to exclude and protect the people from ignorant pretenders and charlatans has been established by repeated adjudications, and is now too firmly settled to admit of doubt. For the accomplishment of this purpose—that is, to provide means for the protection of the public health from the ignorance and incapacity of those who are unfitted to discharge the duties of a physician—Oregon, as other States have done, enacted the law in question, and, unless it grants to some citizen or physician, or class of them, some right or immunity which, upon like terms, or under similar circumstances, it denies to another, it is a valid exercise of police power, and must be upheld.

As it is the right of the State to prescribe qualifications based on knowledge or professional skill, necessarily the State must be the judge of such qualifications, and, if the rule established to determine them is reasonable and appropriate for that purpose, it cannot operate to deprive any one of the privilege or right to practice his profession. The test of qualification, under the act, is based on medical skill and knowledge. If the person seeking to practice medicine has a diploma or license from some reputable institution, it is sufficient evidence, under the act, of the requisite qualifications to entitle him to practice. It is only when the person wishing to practice has no such evidence of his qualification that the act requires that he shall submit himself for examination by the board. In establishing this rule, the State saw fit, for reasons satisfactory to itself, to except from its provisions those physicians who were engaged in the practice at the passage of the act. In doing this it made the fact of being so engaged in the practice at that time sufficient evidence of qualification—equivalent to a diploma—rendering an examition unnecessary. To apply the language of Chief Justice Hawley, of Nevada, it in effect declared that the physician or surgeon who was engaged in the practice immediately preceding the passage of the act was as well qualified, in the judgment of the State, to continue the practice of his profession, as the student, coming fresh from the halls of college with his diploma, was to commence it. But in establishing this rule as to these physicians and surgeons the State did not deny the privilege or the right of practicing medicine and surgery to any one. No class of citizens of this State is prohibited from the practice of medicine or surgery by the act, provided they have the proper qualifications, and comply with the law in relation thereto. The error of the first contention consists in assuming that the act grants "privileges or immunities" to one class of citizens or physicians of this State which it denies to other citizens of the State or other States.

The act does not grant privileges or immunities to any citizen or class of citizens, either within or without the State. It only establishes a rule of evidence by which qualification to practice medicine and surgery is to be determined. It makes the fact of a person being engaged in the practice when the law took effect sufficient evidence of his fitness to continue the practice of his profession without an examination, in the same way that the diploma of the student is accepted as sufficient evidence of his fitness to commence the practice without an examination. Such and similar provisions regulating the practice of medicine do not operate to deprive any one of the privilege to practice his profession, and have uniformly been held by the courts to be constitutional.

THE ANTI-VIVISECTIONISTS OF LONDON.

Mr. Lawson Tait has taken public stand in the company of the opponents of vivisection. At an anniversary meeting held in October, he participated in the attacks then made upon the existing laws that govern the medical experimentation on the lower animals. As reported, Mr. Tait subscribes to the opinion that no useful knowledge can now be obtained by the methods of modern laboratory research employed by all, or nearly all, of our leading physiologists and pathologists. Mr. Tait characterized these methods as mediæval and compared them with "pressing an accused person with weights in order to make him plead." He pronounced the defenders of vivisection to be without logical argument. These positions of Mr. Tait are not exactly new, for there have already been made counter-attacks upon him; for example, Mr. Horsley has said of him in public that while Mr. Tait is admittedly an operating surgeon of great dexterity, his writings show him to be ignorant of science and her requirements; and that he seldom loses an opportunity of declaring his contempt for pathological science, "to do which is to place himself out of touch with the modern school of thought." Mr. Tait invites such compliments as these and he probably heeds them not. The great lights of the London profession, Sir James Paget, Sir Andrew Clark, Sir William Jenner, and Dr. Wilks are among the defenders of vivisection and have publicly reprobated the acts of the anti-party. The late Sir William Gull was, during his lifetime, in the same company of thinkers: he was on one occasion asked by a lady if he did not regard the experimentation on the lower animals, as done by the men of medical research, as an act of unnecessary cruelty. "Madame," he replied, "there is no cruelty comparable to ignorance." Sir William Jenner has pointed out the strange inconsistencies of the opponents of medical vivisection when those persons call for no restrictions in the commercial or agricultural attacks on predatory animal life. As he said in 1876, any man may catch a rat in the most cruelly devised kind of trap, hunt it with dogs, or poison it with strychnine, or destroy it as he pleases, from motives of fear, dislike, or for the preservation of property, but when a scientist puts himself in a position to cause pain, however slight, with a view of increasing knowledge and the relief of human suffering, he finds himself the subject of repressive legislation, and is even branded as a malefactor by the fanatical members of the opposing party.

DOMESTIC CORRESPONDENCE.

Revision of the Code of Ethics.

To the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

"A Conservative Member" opposes the revision of the Code of Ethics of the Association in THE JOURNAL of Dec. 10, for six reasons. In the first four I find the following specifications "its phraseology is lucid;" "it does not contain any superfluous statements;" "the words are simple, the language is pure and good and the presentation of the subject is clear and logical;" "all its provisions are distinctly stated, and it does not contain any expressions that can be justly condemned or that require modification."

Probably the writer was one of the original members of the Association and is wedded to the redundant phraseology of the period when the Code was written. Has he read the editorial of the "*Medical News*," of Sept. 17? If so, will he give your readers the benefit of his opinion of the views therein contained bearing on the quotations above made from his letter? INQUIRER.

SELECTIONS.

CHLOASMA UTERINUM.—Chloasma is simply, so far as its ocular appearance is concerned, an abnormal deposit of pigment in the skin without interfering with the character or function of it.

The term chloasma in its general sense indicates only a condition without even suggesting a probable exciting cause for the pigmentation. It may be due to direct mechanical irritation of long standing; it may be due to some organic disease, as consumption, scrofula, etc.; it may be due to nervous irritability or dependent upon some change or irritation in the uterine organs.

Concerning this last named condition, *which might be* termed uterine chloasma, I desire to say a word, because it is the most common form and most amenable to treatment.

It is rare that we see this disease begin and develop before puberty or after the menopause. Its existence is dependent upon the abnormal activity of the generative organs. From observation I am led to believe that excessive venery is one of the more common sources of irritation that produce the deposit of pigment. In all those cases in which I have been permitted to make a vaginal and uterine examination there was a flabby and enlarged uterus, the cavity of which, including the cervix, measured from three and a half to five inches. The uterine walls also were more or less thickened, and both the os externum and internum somewhat dilated; in short, the uterus assumes *the condition* and appearance of subinvolution as is occasionally seen following confinement. But this condition exists not alone in females who have been pregnant, but in females as well where conception has never taken place.

Uterine chloasma runs an indefinite course; it may exist even to old age or gradually fade away, as it often does, in proportion as the generative organs lose their irritability beginning with the menopause. Since the patches may exist a long time even after uterine irritation has subsided, we are led to infer that the nervous system furnishes in part *that condition on which the deposit of pigment depends*, else there would be no return of it after its removal.

The diagnosis in a general way is not difficult; the most perplexing portion is to differentiate the various causes that may produce such a condition and discover the active one. As before stated, uterine enlargement has been found in every case where a full examination has been permitted; the inference is therefore drawn, right or wrong, that in every case of uterine chloasma there is, in a greater or less degree, an enlargement of the uterus, but the enlargement and irritability of it may depend upon some neurosis.

Our treatment therefore must be twofold: First, to *remove the discoloration of the skin*; and second, to restore the parts on which the discoloration depends to their normal condition. It would be almost useless to attempt to *remove the discoloration without first removing its cause*; both may be treated together, however, advantageously. For the former condition the most satisfaction has been derived from the use of bichloride of mercury (not gold), five grains to the ounce of water, carefully painted over the affected skin. In a few days a bran-like desquamation will appear and with it more or less of the deposit of pigment. After exfoliation of the superficial layers of the epidermis, if pigment still exists, the process may be repeated and continued as long as pigmentation remains.

For the latter condition medicines administered by the mouth are of doubtful utility; personally I have been unable to observe any benefit arising from the administration of any drug by the mouth or subcutaneously. The only treatment that has been of avail consisted of direct applications to the uterus, stimulating it to activity and causing in it powerful contractions; for this electricity may be used, especially galvanism, which causes tonic muscular contractions. But what has served my purpose better is the insertion into the uterus of a soluble intra-uterine pencil which by its presence causes powerful contractive pains resembling labor pains, and thus causes a reduction in size of the organ in a mechanical way. A repetition of this process will in due time restore the organ to its natural condition. This pencil can be most easily inserted by use of a "pencil carrier," procurable of any good instrument maker. One may be improvised, if need be, from an ordinary catheter. Any pencil may be used containing any drug that suits the fancy of the prescriber; preferably I prescribe a pencil containing iodoform on account of *its antiseptic properties. But uterine* contraction in such cases is produced by local irritation, hence it matters but little what the composition of the pencil may be, unless other conditions exist in and about the uterus which must be taken into account. I believe—a belief founded upon past experience—that a judicious treatment along the lines indicated will serve to eliminate that unsightly condition known as uterine chloasma.—A. A. Young, M.D., in *New York Medical Journal.*

MISCELLANY.

OFFICIAL LIST OF CHANGES in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from December 17, 1892, to December 23, 1892.

Capt. W. B. Banister, Asst. Surgeon U. S. A., is hereby granted leave of absence for fifteen days, to take effect on or about January 11, 1893.

Capt. Peter R. Egan, Asst. Surgeon U. S. A., is granted leave of absence for four months, with permission to go beyond sea.

Capt. James D. Glennan, Asst. Surgeon U. S. A., leave of absence granted is extended thirteen days.